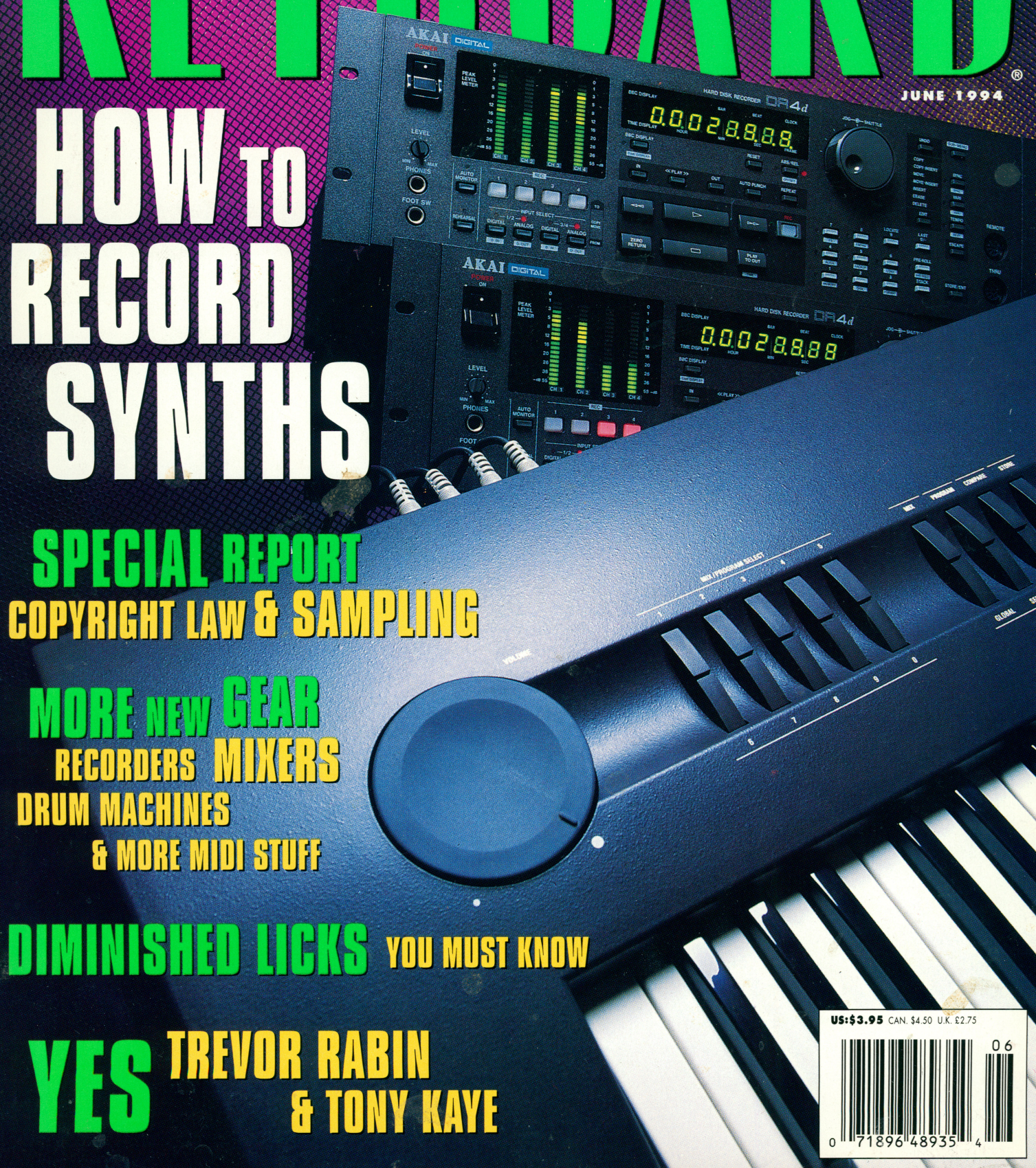
MEGA REVIEWS! QUADRASYNTH • YAMAHA VL1 • MACKIE 8-BUS

KEYBOARD

JUNE 1994

HOW TO RECORD SYNTHS



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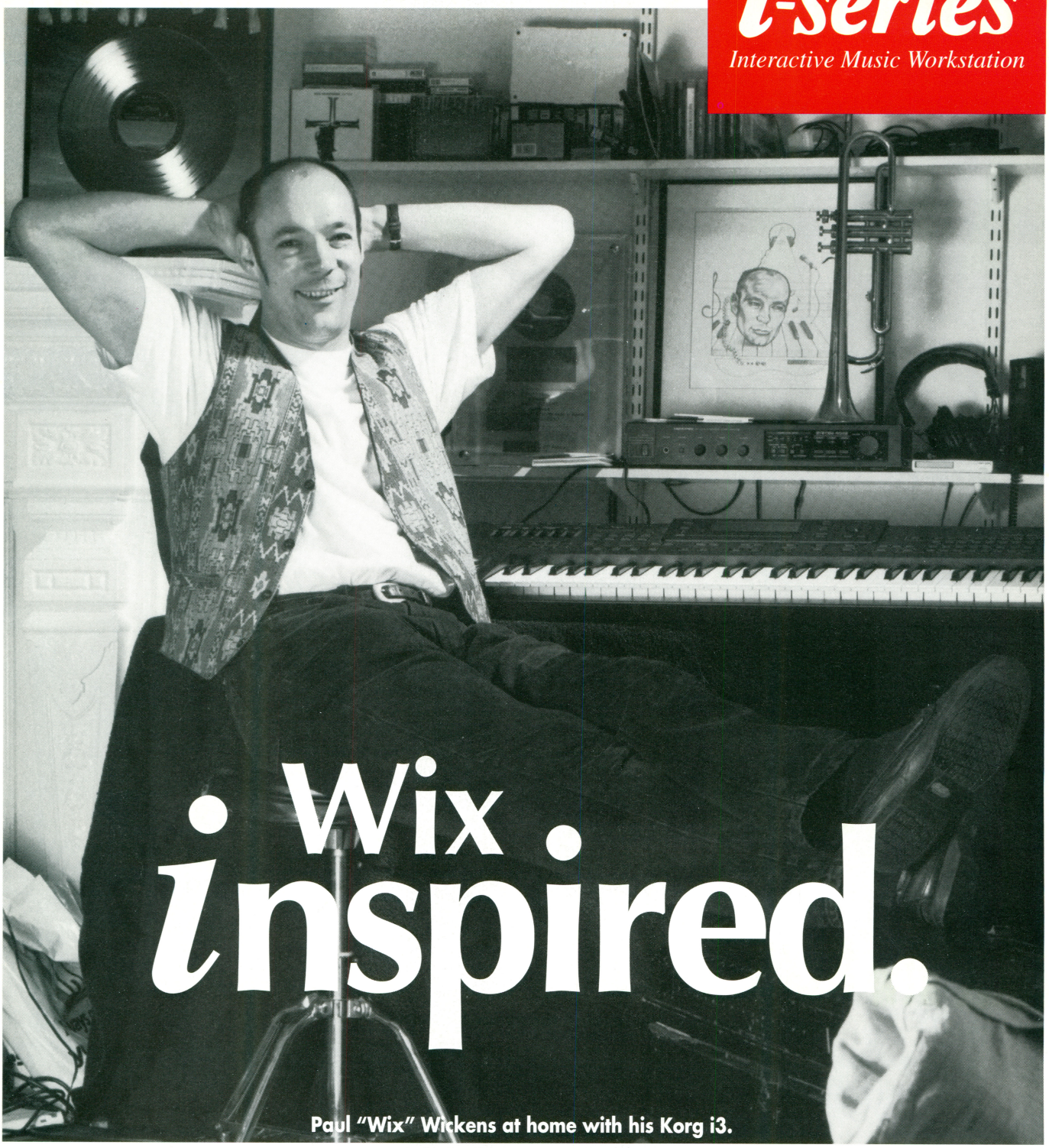

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Paul "Wix" Wickens at home with his Korg i3.

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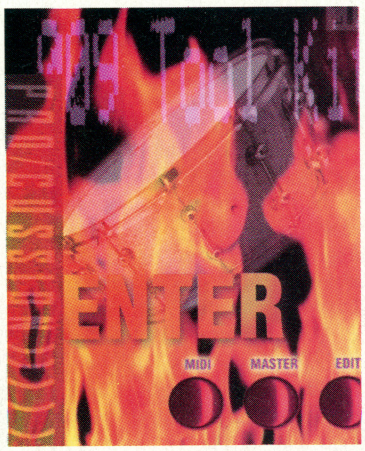

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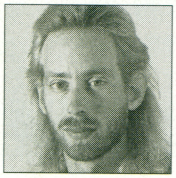

A GAGGLE OF PROPELLERHEADS

THERE WE WERE. JUST ANOTHER GAGgle of American conventioneers holding court at 01.00 hours in the lobby bar of the Frankfurt Marriott. Between rounds of thick black coffee and the house Pilsner, we busied ourselves with that most holy of topics, the probable future of synthesis. It was a likely discussion between a most unlikely bunch — two veterans of the synth world and a slew of executives from Selmer.

Tom Burzycki got things going the instant we were introduced, "Glad to meet you, Dom. I'm really glad Freff's column is back."

Why, I wondered, would the president of a highly respected woodwind and brass instrument manufacturing company even know about Freff?

"I'll bet the mail's really flying now. . . ." As Tom continued it became apparent that he not only played keyboards, he could quote chapter and verse from *Keyboard* — a very groovy guy in my book.

"One of these days someone's going to invent the ultimate synthesizer," he said as it got later and things got giddy and weird. "It will reinvent itself every morning."

"Yeah," someone else chimed in, "and it'll have a special print function to spit out a 5,000-page manual every day."

"Written in Japanglish, of course."

"And a modem function will automatically notify the manufacturer of the instrument's new configurations, so an invoice proportional to the new features can be sent out daily. . . ."

Eventually, we got on to more serious topics, inevitably settling on the Musik Messe topic *du jour* — Yamaha's VL1 and VP1 physical modeling synthesizers.

Are they really The Next Big Thing (as a certain magazine proclaimed on its February cover)? Or are they overpriced and overhyped, little better sounding than a sampler?

I couldn't escape those questions the entire two weeks I was in Europe. For that matter, I haven't been able to escape them since coming back. Since we got our hands on one for review, the discussions about the VL1 have been non-stop.

Predictably, our staff propellerheads complain that for a $5,000 instrument, its architecture is too closed. They want to get in and tweak those modeling parameters. But even Yamaha — and everyone else rumored to be developing instruments based on physical modeling — is wrestling with what that access should mean. After all, physical modeling is very different from any other type of commercially available synthesis. Building playable instrument models is no simple process. And it's not one for the faint of heart. How long, for example, would it take a neophyte with no knowledge of acoustics to figure out their trumpet patch wasn't making any sound because they'd inverted its bell?

Still, as an intrigued propellerhead myself, I second the emotion — I want some access, perhaps through some software-based development system or secondary level of programming functions. But it was incredibly gutsy for Yamaha to actually build a musical instrument instead of an erector set.

What did assistant editor Ernie Rideout, our trombone-playing synthesist behind the microscope, think of the VL1? You can read that for yourself on page 104.

We were well into production on this issue when Negativland's Chris Grigg sent us a fax asking if we were aware of the Supreme Court's ruling on the Luther Campbell vs. the copyright owners of Roy Orbison's "Pretty Woman" infringement lawsuit and its profound implications on so-called "fair use" and sampling. We weren't, Chris was, you should be. Read the story on page 88.

Enjoy.

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KEYBOARD (ISSN 0730-0158) is published monthly by Miller Freeman, Inc., 600 Harrison St., San Francisco, CA 94107. Telephone (415) 905-2200; FAX (415) 905-2233; TELEX #278273.
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LETTERS

Keith Emerson

[*As we reported in last month's World View section, Keith Emerson seems to be on the road to recovery, following surgery on his right arm and a careful program of therapy. But our Apr. '94 cover story on Keith's nerve ailment and the possibility of his having to retire from performance prompted an outpouring of concern from readers. We've forwarded these letters to Keith, who expresses his appreciation for the concern shown to him by his fans during this sensitive period. Here's a sample from this correspondence.*]

Seeing the words "Will Emerson Ever Play Again?" on your Apr. '94 cover was a shock. Though it's not a possibility I wanted to contemplate, I thank Keith for deciding to share the story. And thank you for printing it. It broke my heart to read it, but I'm glad to know the truth.

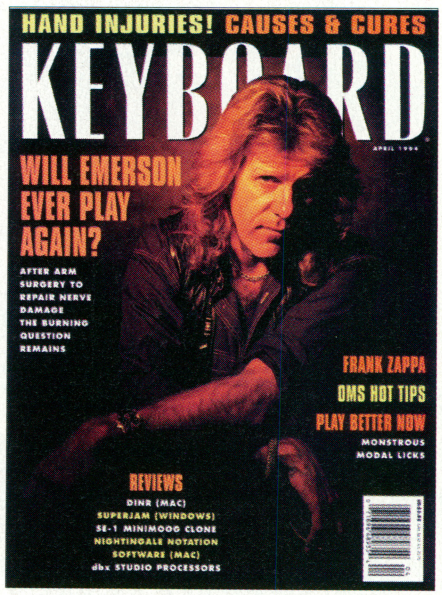
Linda Shultz
Eden Prairie, MN

Reading that Keith Emerson may not be able to play again made me examine why I play and write, and how precious the time is that we have to do it in. Bottom line: The very next day, when I sat down to play, I found myself watching my body positions. I remembered all those monotonous days in front of Mrs. Barker, my piano teacher, as she admonished me to sit straight, showed me how to hold my arms, and told me to imagine holding an egg under my palm for proper hand position. Maybe it wasn't as much medieval harassment as I had thought.

Lee Hansen
Lumpy Productions
Denver, CO

Dear Keith:

I can understand "first-hand" how you must feel. I am in a similar position of not knowing if I will be able to play. I have twice broken the small finger on my right hand, suffered a hairline fracture of my right elbow, and, this past summer, broken my left wrist in half. I am presently consulting with a hand surgeon about what options



I have before resorting to surgery to restore full rotation of my left wrist and get back the feeling I've lost in my left thumb and index finger.

With all I've gone through, I've tried to keep a positive attitude. The music is always in us; it never leaves. Our determination to play is the guide we need to return to performance. Patience and prayers are the key. You have all of mine.

Scott Weber
Milwaukee, WI

My heart goes out to Keith Emerson for who he is. He has my support, no matter what happens to him.

Lori Hyatt
Morris, MN

Hands On Fire

[*Our article on occupational hand ailments, which ran along with our look at Emerson's problem, also prompted concerned response from readers.*]

I am a classical pianist. Performing was a major part of my life. For two years, beginning in June 1987, despite treatments from chiropractors, acupuncturists, physical therapists, and psychiatrists, I suffered from pain in the fingers, hands, wrists, forearms, and elbows of both my arms. At first the pain came only during or after playing, but then it occurred when I used my hands for any actvitity, such as brushing my teeth or lifting a paperback book.

Finally, in 1989, I attended the Dorothy Taubman Institute of Piano, which takes place each July in Amherst, Massachusetts. Taubman has discovered that certain inefficient movements at the piano (or through use of other instruments, computers, etc.) can cause pain, weakness, or numbness. Learning more efficient movements can be therapeutic and not only enable one to play again, but often to play at a better level. I retrained, using this technique, and now I can play completely without pain for as long as I want. I highly recommend attending the Institute or contacting a Taubman teacher.

Beth Tomassetti
Springfield, OR

[*For further information, write to Enid Stettner, executive director, The Dorothy Taubman Institute of Piano, Medusa, NY 12120.*]

Frank Zappa

In his recollections of Frank Zappa [Apr. '94], Robert L. Doerschuk discounted dozens of composers whose God-given creativity has made our lives richer and deeper, and whose works will be performed for generations. Was Zappa really "the most important composer of our time"? What kind of value system so elevates an oddity who pursued rebellion for its own sake, was contemptuous of society, and had little more than disdain for his peers? Is virtuosity depth? Is complexity substance? If Zappa had anything important to present, he failed to communicate it to more than a small minority. His contributions, while certainly interesting, were mostly fringe and will disappear like a cloud.

Jonathan Bell
Grangeville, ID

When someone asks if God is dead, consider, by way of evidence, that Frank Zappa is

---

Send correspondence to: Letters, Keyboard, *411 Borel Ave., Suite 100, San Mateo, CA 94402.*

Because of Keith's spirit, energy, and dedication to excellence, I was able to remain positive after a life-threatening accident. His attitude toward life has helped me reach my own potential, and every day I'm upping the standard. Since Keith put a smile back on my face, I feel that I have an obligation to return the favor. If this letter inspires him to remain positive, that would only be one-fiftieth of what he has done for me.

Stuart Chambers
Kanata, Ontario

[*Stuart included this photo with his letter. Taken backstage at the Montreal Forum after an ELP concert during the* Black Moon *tour in August '92, it shows Stuart (center) and his brother Jack with Emerson.*]

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gone and Rush Limbaugh isn't. Frank was a blazingly real person in an age of plastic. His passing leaves me heartsick.

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Dobbstown, Malaysia

That Theremin Vibrato

[*Our Apr. '94 Letters column included a note from Jon F. Eiche, written in response to quotes from John Cage in our Feb. '94 article on Leon Theremin. Cage's charges that most theremin players ignored the potential of the instrument by employing a "sickeningly sweet vibrato" were addressed by Eiche, who noted that "the depth of the vibrato . . . is to some extent built into the design of the instrument. . . . (The) scale of pitch to distance, along with the limits of a performer's fine motor control, determines how deep the vibrato is when he or she wiggles a finger of shakes a hand." This month, Bob Moog, who manufactures theremins under the auspices of Big Briar, offers a further clarification.*]

In *no* sense is the depth of the vibrato built into the design of the instrument. The player imparts vibrato by moving his or her right hand, just as violinists or cellists do with their left. If you move your hand a little, you get a shallow vibrato. If you keep your hand still, you don't get any vibrato. It's easy for a thereminist to impart vibrato, but it's *not* easy to control the vibrato precisely and continuously. That takes practice.

Soloists will generally impart vibrato, or at least tremolo, if they possibly can. Vibrato speed and depth generally fall within a narrow range, *regardless of what instrument is being played.* Whether you're Clara Rockmore, Pablo Casals, Harry James, Joan Baez, or Jan Hammer, your vibrato is about 5-6Hz, your frequency deviation is 1-3%, and you increase both the speed and depth of the vibrato when you play louder. There's a very good psychoacoustic reason for this, having to do with the characteristic response time of the human brain. If Cage didn't like that, that was his business, but that's the way we're built.

Bob Moog
Leicester, NC

"Och?" Yuck

Dear Dave Stewart:

Are you nuts? Everyone — that is, those of us in the real home organ world — knows that Eric McWhorter (you spelled it wrong) is a Musical God who sets new standards in the home organ industry. Artists such as Eric give new hope to musicians who are held back by the restraints of technology and the growth of art. They give us an outlet in this scary world full of techno wizardry.

You belittle Eric for not knowing what MIDI is. I would wager that most home organists do not know either. Who cares what the latest jargon is in your musical world, when you can get replacement parts for your organ at Radio Shack?

So get off your high horse. Your article (Inside the Music, Apr. '94) furthers the stereotypes set forth by unscrupulous and inconsistent reporters such as yourself. Your snobbish attitude has to go.

Ken Goodwin
Cincinnati, OH

Thanks for the Eric McWhirter interview. Haven't laughed that hard in quite a while.

R. Whitehouse
Toronto, Ontario, Canada

[*Dave Stewart replies: "We checked with Eric on the spelling of his surname, and he confirmed that it is 'McWhirter' — however, the 'W' and 'r' are run together, in the Scottish manner, to produce a kind of belch, so the intervening vowel is actually silent. Eric says he was 'delighted' with the article in* Keyboard, *but somewhat bemused by R. Whitehouse's response. 'What's so funny? Home organ playing is no joke,' complained the tortured Scottish genius.*]

How *'Bout* Those Amigas?

Sheesh, Sean Henderson. Do you get out much? You can call the PC all the names you want [Letters, Mar. '94], but it is here to stay. The next generation of Macs is going to be PC-compatible, and with the coming Power PC many new changes are on the horizon. Windows 4.0 (Chicago) is just around the corner,

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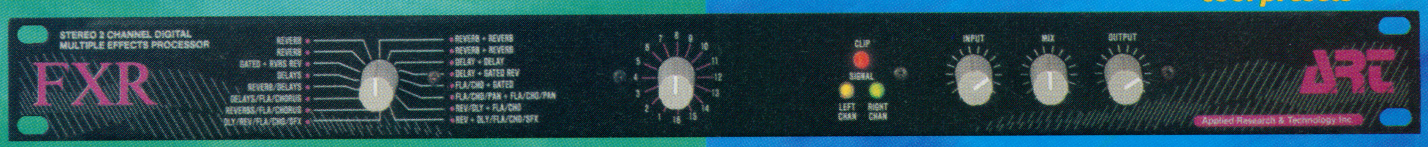

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and it will do away with DOS entirely. Wonder what we'll do with all that freed memory and speed?

I'm sorry that Commodore didn't do a better job of promoting the Amiga. I would gladly have moved into it after my 64. But I went with the platform that is most usable, will work with the peripherals I need, and can easily be replaced, repaired, or upgraded by known vendors with proven track records. You can hang onto the past all you want, but the rest of us have work to do.

Joe Hannigan
Philadelphia, PA

Analog Wars

[*The latest blow in the battle between analog nostalgists and digital modernists was struck in our Apr. '94 Letters column. Terry Schubring compared an ad from some 13 years back in* Keyboard *which proclaimed the Crumar GDS "will never become obsolete," with a more recent pitch for the Marion Systems MSR2 as "the first synth you'll never have to throw away." Schubring's conclusion: "You could spend your last $20 on a* Keyboard *subscription and dream about Synclaviers, or you could hit the pawn shop and own a real live SK-5 sampling keyboard." This month, another reader picks a semantic bone with Schubring.*]

What does "obsolete" mean? I shall quote from Webster's: "no longer in use; out of date." Can anyone make the assumption that no one is using a Crumar GDS? Is the Minimoog obsolete simply because it is no longer being manufactured? Are 486s obsolete due to the advent of the Pentium processor? How can you criticize technology's rapid movement? Sure, you can load your house with inexpensive crud and visualize yourself as a genius for investing in quantity over quality. Do you also wait until your supermarket has a sale on old milk before you buy?

Three weeks after I bought my Centris 650, Apple discontinued it and released a lower-priced equivalent. Am I supposed to cry about it? No, I'm a big boy. I made my own decision that I would rather have the Centris than my money. I could wait for the Power PC, but I'd be missing a year's worth of enjoyment from my investment.

Nate Goyer
San Jose, CA

I will settle the great analog vs. digital debate right now. If you were stranded on the proverbial desert island with just one synth, would you rather have a Minimoog or a Korg Wavestation? If you choose the Minimoog, you are either a lunatic or a pathological liar.

Steven M. Shatz
Bayside, NY

Clean It Up

In the March '94 issue of *Keyboard*, in the interview with Mac Rebennack, I find these words: shit, crap, motherfucker, shit, shit-music, fucked, tits, dick, sucking dicks, fuck, fuck, ass, and piss, in that order. In the interview with Trent Reznor, I find these words: fucking, fuck, fuck, bullshit, shitty, fuckin', fuck, shitty, bullshit, shit, fuck, fuck, fuckin', fuck, suck, and fuck, in that order.

You have already guessed why I am writing. Profanity is never in good taste, especially in a music magazine. Music is a language and an art form. You should reject outright all profanity in *Keyboard*. If your staff is conducting an interview with a musician and they start uttering foul language, simply terminate the interview and say, "I am sorry, we cannot use this interview because *Keyboard* does not print profanity." Then pack up and leave.

I hope you will raise your standards. If you don't by the time my subscription expires, I certainly will not renew.

Wallace R. Rust
Greece, NY

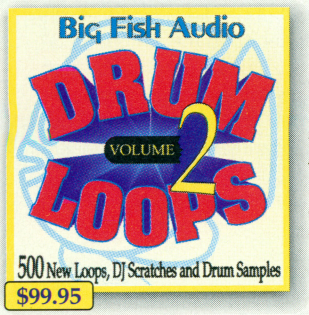
In your Apr. '94 Letters column, Jamey Aebersold states that he was offended by a "curse" word that was printed in *Keyboard*, and adds that "reading your magazine has become a dangerous act." Is this guy nuts? Does he think that reading a four-letter word is dangerous? Aebersold should stick to reading *Sesame Street* if he can't handle the language in *Keyboard*.

Steven Shatz
Bayside, NY

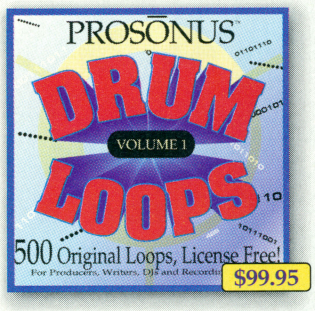
Big Fish Audio

Audio CDS:

Ambient, Progressive, Trance, Techno, Rave- These styles are rapidly evolving. Most of the synth loop discs on the market feature outdated synth and bass loops that would fit right into a cheesy commercial or a Sega video game, but just won't cut it in 1994. This disc is packed- over 70 minutes of trippin' **NEW** Analogue Grooves and Synth / Bass Loops. Step back, Look ahead.



Fat Fresh and Phunky, Drum Loops Volume 2 contains the freshest dance and **rap grooves** from some of LA's hottest producers. Also includes the samples used to construct the Loops, **DJ Scratches** and Cool Percussion FX. Rap, Old School, New School Industrial, and Techno- from 95 beat LA Hip Hop to 140 beat Berlin Rave. This disc is the perfect compliment to Volume 1.



Over 500 Rap, Hip Hop, Techno, Industrial, Rave and Go Go Loops on the loops disc that started it all. Variety and Value- there's not a dud on this disc. The edits are precise, the tempos are correct and the sounds ooze authenticity. Representing a broad cross section of dance and street styles, Drum Loops Volume 1 is the disc you'll turn to again and again when you need a **Big, Bad Beat**.

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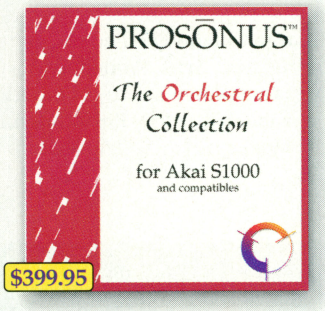

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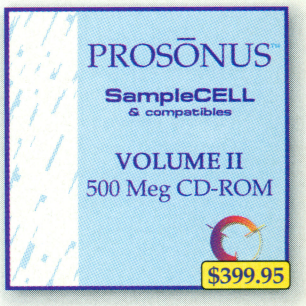

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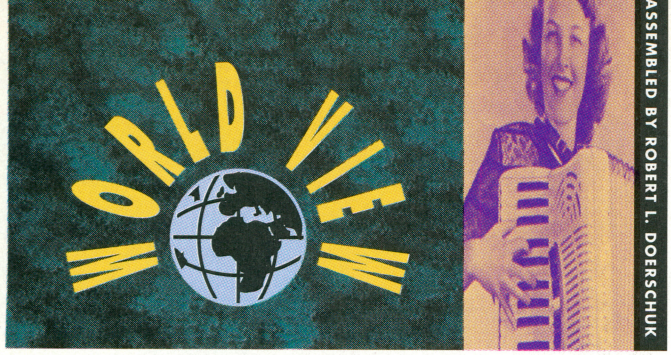
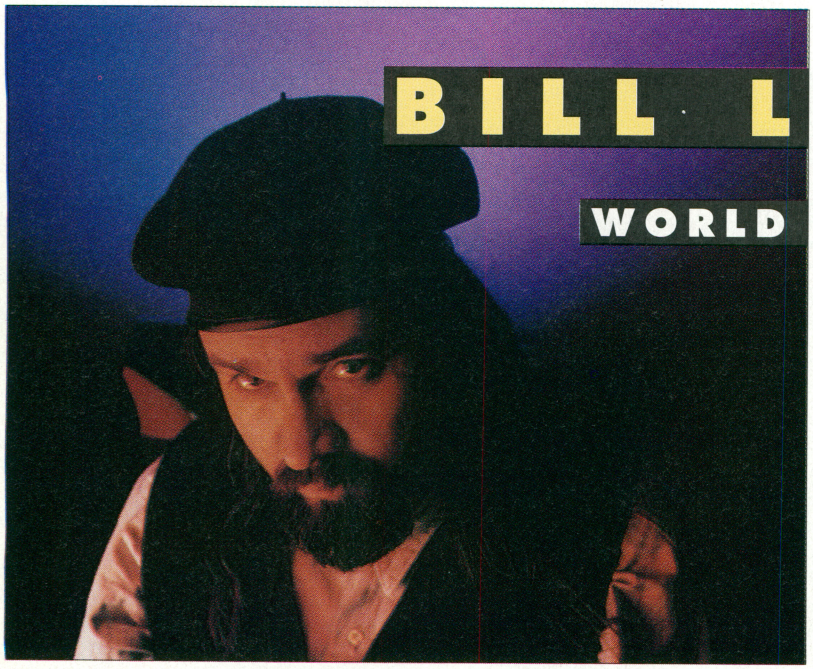


CAREER UPDATE

Hot on the heels of her MIDI/Disklavier transliterations of **George Gershwin** piano roll performances, **Artis Wodehouse** is preparing a similar project based on piano rolls of **Jelly Roll Morton**. Look for it on Nonesuch in September. . . . R&B session stalwart **Kevin Toney** is on the road as conductor for *Five Guys Named Moe*, the hit stage show based on the music of **Louis Jordan**. Toney makes it a point to keep his chops up by putting down the baton and playing the piano part at two of the eight weekly shows. . . . **Marillion**, with **Mark Kelly** in the keyboard seat, completes its European tour with a swing through Britain in May. No word yet on American dates. . . . *Music News Network* reports new albums in the works from **Asia** and **Dream Theater**, with **Geoff Downes** and **Kevin Moore**, respectively, at the keys. . . . **Jerry Harrison**, formerly of **Talking Heads**, steps up his production output on upcoming releases by **Fatima Mansions** and **Traci Lords**. . . . **John Locke**, whose mellow electric piano lines with **Spirit** helped set the stage for fusion, guests on the next album by Midwestern metal juggernaut **Thunderpussy**, scheduled for release in December. . . . **MC 900 Ft. Jesus** will soon hit the road with the largest live band of his career in support of *Loony Tunes*, his recent debut on the American label. . . . Cuban piano sensation **Gonzalo Rubalcaba**, no longer *persona non grata* in the eyes of our State Department, performs on June



BILL LASWELL

WORLD MUSIC MIXES FROM A MATERIAL GUY

Producer Bill Laswell battles accusations of musical imperialism: "Everything I do is full of contradiction. That's the sorcery aspect."

Bill Laswell has a low tolerance for people who learn technique, styles, and systems but never get around to developing a "touch" that connects their instrument to their music. "Musicians grow up copying a style," the producer laments, "but they often don't realize that that style comes from an idea, usually from one person. So we have legions of people following a style rather than an idea."

Fortunately, in his broad forays, Laswell gets to work with artists for whom this touch is like a sixth sense. He has played on or produced more than 100 albums, including projects by Herbie Hancock, Laurie Anderson, Iggy Pop, the Ramones, Ryuichi Sakamoto, Yoko Ono, and Mick Jagger. Through his Axiom label he has released an impressive catalog of genre-bending noise and influenced players from avant-garde classical and jazz to rock, reggae, and funk.

He has also been dissed by detractors who dismiss him as a raider, a kind of scalp hunter who pillages traditional music to feed his insatiable appetite for genre-hopping. "There will always be that kind of criticism," he shrugs. "I think what I've been doing is quite consistent. A lot of the music I've released, which might be called ethnic, has been recorded in villages or in the music's place of origin. So, if I could call what we've been doing an achievement, it's because our field work involves capturing music for what it is and where it is, at the time it's happening."

Laswell has released the core of his work since 1979 under the Material name. Material isn't a group as such but a more flexible pool of players drawn from the Axiom community, along with guest players. Their seventh and most recent album, *Hallucination Engine* (Island) features a typically dazzling cast, including Wayne Shorter, Bernie Worrell, Bootsy Collins, Sly Dunbar, and Beat icon William Burroughs.

Like the music on *Hallucination Engine*, Laswell is a mass of contradictions. He talks about willfully destroying "lingering connections" between one project and another; then, in the next breath, he insists that everything evolves, that you can't just abandon a sensibility, and so one project bleeds into the next. "Everything I do is full of contradiction," he admits. "That's the sorcery aspect."

PHOTO: THI-LINH LE

22 at the Aspen Jazz Festival. For ticket information, call (303) 923-8807. . . . Though renowned for years as an outstanding intepreter of contemporary piano repertoire, **Ursula Oppens** had never played a solo recital in Carnegie Hall — until now. Her April 20 debut featured a program of Beethoven and Ravel, plus the premiere of a work by **John Harbison**. . . . **Steve Porcaro** has just returned from a Japanese and Swedish tour with the **Jay Graydon All-Star Band**, whose stellar lineup included keyboardists **Bill Champlin**, **Bill Cantos**, and **John Van Tongeren**. He's also been busy in the studio with longtime partner **David Paich**, recording and producing tracks for gospel great **Tramaine Hawkins**. . . . **Richard Einhorn** premiered his opera-oratorio score for *The Passion of Joan of Arc*, an epic silent film shot in 1927, at the Academy of Music in Northampton, Massachusetts. . . . **Anthony Davis** has been commissioned to compose an orchestral work to commemorate the 50th anniversary of the Atlanta Symphony Orchestra. The premiere will

On both structured and free pieces, mixing is the crucial stage for Material sessions. "On the new album, it was more a case of mutating the sounds," Laswell explains. "This mix was more of a deconstruction: adding, taking away, but mostly mutating things from one type of energy to the next in a more extreme way."

More generally, he considers an awareness of when to talk and when to wait to be the key to successful production. "It's about communication and taking a situation or an artist to their highest point of distinction. Sometimes that requires that you don't interfere; sometimes you have to keep repeating things. The point is, you're trying to capture something that's natural. My role is about bridging those extremes between the natural and the unknown."

In Laswell's case, this approach adds up to an ideal combination of critical acclaim and commercial viability. Yet he insists that he never lost sleep worrying about finding success in his profession. "I always tried to find ways to destroy that idea of success, or to discourage the idea that it was happening or that it was important. But as you become a little older, you begin to see things the way they are. And . . . well, I guess I feel pretty good about everything." —*Lesley Sly*

REV. BILLY C. WIRTZ

the TEN COMMANDMENTS of SALOON GIG SURVIVAL

Friends, it's time once again for some uplifting words from your favorite religious administrator, the self-professed "Director of the First House of Polyester Worship and Horizontal Throbbing Teenage Desire," Reverend Billy C. Wirtz.

Yes, his opinions do have a southern skew, being as how he was raised south of the Mason-Dixon Line. "But hell," as he puts it, "there's lots of stuff ripe for humor down here. You know, the darker side of Jerry Clower, TNN, or even *The Dukes of Hazzard*. Being raised with pro wrestling and gospel music, well, the two kind of fused themselves in my brain. And, of course, those concussions I got as a kid didn't help things."

As listeners in countless tent revivals can attest, the good Reverend plays a mean piano in the style of such greats as Otis Spann and Moon Mullican. But for now, we'll have to settle for a dose of his hedonistic musings. Should you need further proselytizing, consult his volumes of prophecy: *Deep Fried and Sanctified*, *Backslider's Tractor Pull*, *A Turn for the Wirtz*, or the latest, *Pianist Envy*, all on Hightone Records (220 Fourth St., #101, Oakland, CA 94607).

"Oh, ye of little faith in the ambidextrous abilities, it's time for a few lessons in surviving profit-motivated performances for the judgmentally impaired — better known as 'bar gigs.' Although these tips apply especially to the South, the advice is universal.

"1. Never play anything by John Tesh in a bar with a pool table.

"2. Matter of fact, never play *anything* by John Tesh *anywhere* (unless you're John Tesh).

"3. If you see any Confederate flags or flyers regarding line-dancing lessons, make sure you know 'Last Date.'

"4. Never make fun of the guy yelling for 'Freebird.' He's drunk, pissed off, and probably armed.

"5. Instead of 'Freebird,' offer to play 'Stormy Monday,' which works 90 percent of the time. If you don't know 'Stormy Monday,' play any slow 12-bar blues, announce it as an old one from the Allman Bros., and hope for the best.

"6. Learn at least three lewd heckler comebacks, and practice them on drunks who scream for Jimmy Buffett.

"7. Never book a gig at the local T. J. McBennigan Fudpuckers during playoffs, the World Series, or the Super Bowl, unless you don't mind your heart-wrenching version of 'You Don't Know Me' interrupted by loud drunken cheers when the home team scores.

"8. Never toss anything offstage that you wouldn't want thrown back twice as hard.

"9. Never let some drunk play your piano, because chances are he/she will play (a) 'Lean On Me,' (b) 'Color My World,' or (c) a ten-minute original composition entitled 'Colorado Sunset' that bears a striking resemblance to 'House of the Rising Sun' minus the extra *C* chord in the first verse.

"10. Take no shit off of yuppies."

—*Diane Gershuny*

PHOTO: PETER DAMROTH

take place on May 15, 1995 . . . . Organ legend **Jimmy Smith** backs singer **Marlena Shaw** at the Pasadena Jazz Festival on August 6. Their set will include songs from his latest release, *Sum Serious Blues*. . . . Born again? Just another gig? Whatever the reason, **Rick Wakeman** guested on **Pat Robertson**'s *700 Club* last March . . . . Congratulations to **Ahmad Jamal**, a winner of the most recent Jazz Master Fellowship Awards. Fellow jazz piano great **Billy Taylor** presented the award to Jamal on behalf of the National Endowment for the Arts last January.

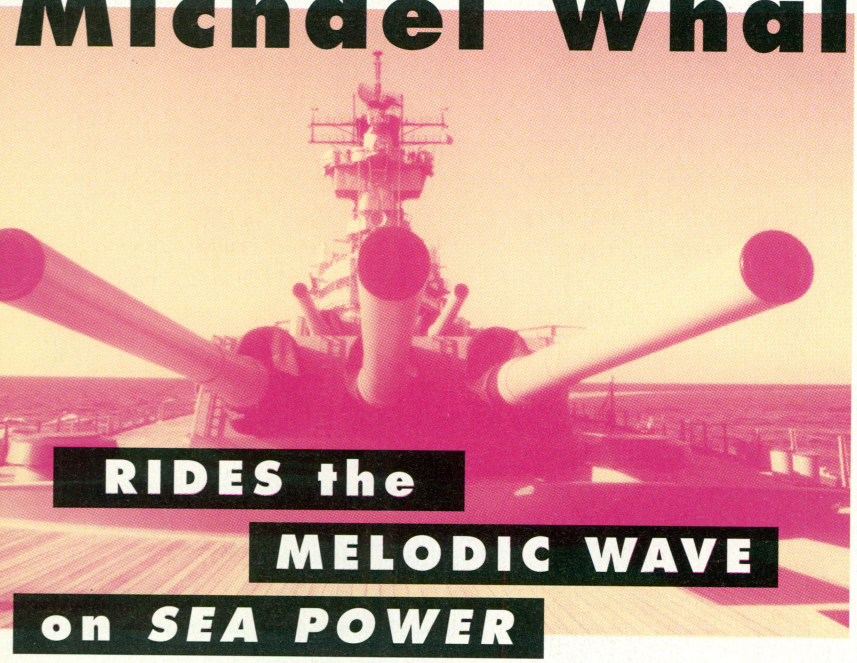
CRIME WATCH

SETBACK FOR SPEECH POLICE. The battle continues over efforts to suppress "obscene" music. Last December, a record retailer named Obie Slater was arrested in Danville, Kentucky. Slater had sold a cassette single of Dr. Dre's "Let Me Ride" to a 12-year-old, an act that violated a municipal ordinance banning the display of "sexual materials harmful to minors," according to police. Charges were dismissed several weeks later, after representatives of the Recording Industry Association of America convinced the prosecutor's office that the ordinance was restricted to "pictorial" sexual materials.

ONSTAGE

LA MONTE YOUNG: STILL RAYNIN', STILL DREAMIN'. *Dream House: Seven Years of Sound and Light* is a multimedia collaboration between La Monte Young and visual artist Marian Zazeela. The exhibit features two environmental installations, one wall installation, and one neon work by Zazeela, which are experienced to the sound of a new Young composition whose title — trust us — is longer than you need to know. We will tell you that the music is created from sine wave components generated digitally in real time on Young's custom-built Rayna synthesizer, and is based on frequencies tuned to the harmonic series between 224 and 288, using

Michael Whalen



RIDES the MELODIC WAVE on SEA POWER

Big guns and the guys who shoot 'em are only part of the watery tale told by PBS and scored by Michael Whalen (R) on *Sea Power*.

You can practically smell the salty air in Michael Whalen's score for *Sea Power*, the series scheduled to air Tuesday nights, July 5 through August 9, on PBS. The surging tides, the hissing surf, the . . .

"Um, actually, the show really isn't about the sea," Whalen suggests. "It actually highlights some interesting people, who then take you to the sea. My job was to underscore what these people are about. It wasn't like, 'Okay, I'm thinking about the Pacific Ocean. Here we go.'"

Struggling to recover our aquatic reverie, we bring Whalen's attention to the melodies in his score, which unfurl, long and lonely, like gulls spanning their wings against the sky. And what about all those piano and harp ostinati, which sparkle like sunlight on the surface of . . .

"Okay," he concedes. "That whole post-minimalist thing on the piano and the harp came out of the idea of people on a ship. What do they look at when they're on a voyage? What are they thinking about? Where are they going? Are they trying to escape something? I was trying to establish this idea of movement. Now, I did try very hard to make the whole fifth episode sound watery. I used this patch on the Korg 01/W; when you play it real low, it gives you this wavy sound. I added some breath and air to that, which annoyed the sound guy, who called me up and said, 'Hey, you're taking away my wind!' But that was the only time I did that in four hours of music for the whole series."

You're gonna have to settle this for yourself. Watch the show, or check out excerpts of the score on the *Sea Power* CD, available on Narada. One thing is clear: Whalen knows how to put an evocative soundtrack together. With a live ensemble enhanced by his own Synclavier parts and Yamaha WX11 lines, he paints delicate aural pictures. Even with electronic elements in the mix, his sound harks back to pre-synth film music. "I like to put the synthesizers into the background," he explains. "The warmth of the live stuff is out front. The synth stuff adds an edge or some depth, but you're not sure what it is. I don't want a sound waving its hand in the background and going, 'Hey, look! I'm an M1 patch!'"

Like his orchestrations, Whalen's writing on *Sea Power* avoids trendy formulas in favor of a more tradi-

numbers with factors of only nine, or . . . . Well, the easiest way to take all this in is to drop by the MELA Foundation at 275 Church St. in New York City, where *Dream House* is open every Saturday. For information, call (212) 925-8270.

INDUSTRY UPDATE

SAMICK ADMITS MISREPRESENTATION. Samick Music has agreed to Federal Trade Commission demands that it cease publishing misleading information about its pianos. Promotional materials distributed by Samick had described their soundboards as constructed of "solid spruce" or "spruce," when in fact only the outer layers were made of spruce, with other types of wood used throughout the rest of the soundboards. Samick also agreed to pay the U.S. Treasury $266,000 in "disgorgement," in effect a relinquishing of profits possibly earned as a result of the misinformation. According to the FTC, this settlement does not constitute an admission of guilt by Samick.

BULLETIN BOARD

KNOW YOUR AUDIENCE. Studies by the Recording Industry Association of America indicate that the music public is aging, losing interest in rock, and getting into country. Based on monthly telephone surveys of 225 randomly selected music consumers, the RIAA survey finds that the number of customers over age 45 has risen for the third consecutive year, from 7.0% of the total record-buying public in 1990 to 14.6% in '93, in contrast to shrinking numbers of customers aged 15-34. Rock albums added up to 32.6% of total sales in '93, down from 37.4% in '90, while sales of country albums rose from 8.8% to 17.5%. During that same period, CDs advanced from 42.5% to 60.8% of album sales, surpassing cassettes as the preferred medium, while LPs, the passenger pigeon of recording media, fell from 4.3% to 0.2%. Further details are available from the RIAA, 1020 19th St., N.W., Washington, DC 20036; their

tional approach. "I like to work with sound design," the young Berklee-trained composer says. "But my first love is melody. It's funny, because I just got my first feature film assignment — an action/adventure movie set in Thailand and called *Men of War*, starring Dolph Lundgren. One of the things that sold the producers and the director on using me was not only that I could do the sound design/sequence/ethnic thing, which a lot of guys do very well, but I could also write a melody, which they weren't getting from a lot of other composers who are way higher on the food chain than I am. But that's how I've been writing all my life.

"In fact, I'm working now on the idea of really extended melodies, like 32 bars with no repeat, set within polytonality that doesn't jar you, that lets you go through a lot of harmonic modes. I did that on one cue from *Sea Power*, called 'Sea and Sky.' It goes into a dreamy B section that's not really modal, although it suggests modality. There wasn't a sense of melody there, but it worked well as a harmonic progression; it opened the door and took you to a whole new place. Then, all of a sudden, it turns around, and you're like, 'Wait a minute! I'm back at the melody! How'd *that* happen?' And it happens without the melody modulating to a new key."

We can forgive Whalen's pride of accomplishment. Melody is shamefully neglected in much of the new music we've been hearing; *Sea Power* suggests that we consider dusting it off as a resource every now and then. It also makes a visit to the beach, if not dreams of an Argonautic adventure, seem especially enticing.

—Robert L. Doerschuk

SOUTH BY SOUTHWEST

KEYBOARD VISITS THE REAL WORLD

Scenes from South By Southwest, the four-day music frenzy held every March in Austin, Texas, at which hundreds of unsigned bands battle it out before attentive label executives and journalists in beery dance halls:

• Puzzled young players, with years of practice under their belts, listen at a workshop as a panel of A&R reps share their criteria for finding talent. One suit explains that he signed Monster Magnet because of how "sick and absurd" they are. He then played an excerpt from one of their "vaguely Satanic" songs about "the end of the world and things like that." The song, a hellish welter of guitar noise and requests to "cut off my head," includes no keyboards.

• The next panelist notes that he signed his most recent discovery, the Motherstation, because their singer "went completely mental" onstage. A B-3 lick briefly flickers in their CD snippet before being extinguished by a wall of guitars that includes, at one point, two simultaneous six-string solos.

• When asked whether any of the bands on their label include keyboard players, the folks at the Sector 2 Records booth on the main exhibit floor look puzzled and repeat, as if attempting to translate from Greek, "Keyboards? Keyboards? Uhh, . . ."

• One bona-fide synth player turns up during a set at the Driskill Hotel bar. As he lays down new-agey pads against a rhythm sequence, a good ol' boy turns to his neighbor at the bar and says, "Looks like we got a real *scientist* here."

• At Antone's, the legendary blues joint near the University of Texas campus, four bands play consecutive

Continued on page 14

SOUTH BY SOUTHWEST

Continued from page 13

hour-long sets. The styles range from jump blues to grunge light. The house Hammond organ and Leslie speaker idle onstage, untouched, like wallflowers at the prom.

• "When I haul up my 01/W at showcases like this, after all these guitarists have played, I get all these weird looks — not because I'm good, but just because of what I play." So says Wil Masisak, who is in town with Adrian Belew's party. He admits it didn't occur to him to do a keyboard showcase at South By Southwest.

• Heard at several dozen soundchecks around town: "Hey, can I get more guitar in my monitor?"

• "This is a guitar-slinging town," muses Michael Ramos over a glass of wine after soundcheck with Charlie Sexton's band at Steamboat on Sixth Street. Ramos, a longtime Austinite whose credits include stints with John Mellencamp and the Bodeans, admits, "It's a lot harder to get the crowd up with a kick-ass solo on synth than guitar. But I figure that only makes me play better. I thank God every day that I'm not a guitar player."

• Fleeting keyboard images: Kim Fowley, a gaunt apparition in shades and floppy multi-colored threads, looming above passers-by in the Convention Center; Marcia Ball rocking the house at La Zona Rosa, her long legs crossed beneath her Korg 01/W, keeping time by kicking her right foot against the keyboard stand; Bexar County giant Augie Meyers, with the warmest smile in town, punching out his trademark Tex-Mex eighth-note beat on an ancient Vox Continental during Doug Sahm's midnight set.

• And Flaco Jimenez, the legendary *conjunto* button accordionist, his leathery face beaming as L.A.-cool industry types cheer his fiery duo set in the Convention Center. With a sly glance at his partner, an acoustic guitarist, Jimenez shrugs, "Well, we got no drums. No bass. No sax. But I guess we did pretty good, no?" —*Robert L. Doerschuk*

phone number is (202) 775-0101.

WORLD MUSIC WORKSHOP. Composers in practically all styles of music are invited to sign up for the International Composers' Workshop. Scheduled for Nov. 4-14 in Amsterdam, the Netherlands, the event will explore "the interaction of world musical traditions and contemporary composition" through cross-cultural encounters, lectures, concerts, and private lessons. Registration deadline is July 31. For more information and appropriate materials, write to the sponsoring organization, the Gaudeamus Foundation, at Swammerdamstr. 38, 1091 RV Amsterdam, the Netherlands. The Foundation can also be reached by phone at (011-31-20) 694-7349, or by fax at (011-31-20) 694-7258.

MELLOTRON ARCHIVES. It comes out "maybe twice a year." It'll cost you one dollar per annum. But it's worth the wait and every penny. *Mellotron Archives* is the newsletter for fans of the old tape-playback machine. The latest issue includes an allegedly complete list of every album on which the instrument was ever recorded (768 entries, from Abba to Zomby Woof, with a few singled out for special recommendation), and a "where are they now?" report on notable Mellotronists (Gentle Giant's Kerry Minnear is teaching music and doing commercial work in Birmingham, Robert Fripp is living in Dorset and "suing the arse off E.G. Music"). Whether you play the ancient beast or simply enjoy listening to its majestic quivers, you can line up your subscription to *Mellotron Archives* by writing its publisher, David Kean, at 721 Michael St., Moses Lake, WA 98837.

MAJORS AND MINORS. Curtis Roads heads the faculty and Iannis Xenakis is among the lecturers at a comprehensive course on computer music and composition, scheduled for Oct. 3, 1994, through May 26, 1995, at Les Ateliers UPIC in Paris. Facilities include three of Xenakis's UPIC interactive systems, ProTools and an Akai DD-1000 for digital editing, and plenty more. For registration materials, write to Les Ateliers UPIC, 5, allée

DANILO PÉREZ

Growing up in Panama, one hears multiple rhythms and racing tempos. Pop songs are polyrhythmic, and people talk fast. Jazz is heard only in spits and spurts. There is no blues. So Danilo Pérez's path to jazz was long and twisting, unlike the story he tells about his second RCA/Novus release, *The Journey*, a musical depiction of the African diaspora into the Caribbean.

"After Dizzy Gillespie's death, I had a series of dreams," recalls the 27-year-old pianist. "I saw black people screaming. I saw how they suffered. I felt the pain, and I wrote music for that."

The album opens with "Morning," a solo study in timbre, with strummed piano strings unleashing overtone washes. The rest of *The Journey* is a travelogue, alive with intriguing details: the jazz

de Nantes, 91300 Massy (Paris), France; the phone and fax number is (011-33-1) 60 13 93 39. . . . Hands-on courses in audio post-production for film and video are being offered now by September Sound Productions. These six-session, 24-hour courses begin with an introduction to video technology, explore track preparation for final mix to picture, and conclude with layback to video tape. To enroll, write to September Sound at 100 W. 15th St., New York, NY 10011, or call (212) 675-0787.

P.R. THROUGH CD-ROM. Musicians, actors, comedians, and other performers are invited to publicize themselves on *Today's Talent*, a 600Mb CD-ROM for Mac and IBM-PC. Five thousand copies of this directory will be sent to radio stations, magazines, newspapers, and television outlets as a source of information on fresh talent. The cost depends on how much exposure you want for yourself: Running an 8" x 11" black-and-white head shot for six months costs $25, while one minute of audio for the same length of time goes for $75, and 30 seconds of video adds up to $500. If you're interested, call the publisher, Electric Bookshelf, at (404) 729-0041, ext. 123.

KEYBOARDS STIMULATE ACHIEVEMENT

A study sponsored by Baldwin has concluded that keyboard instruments in classrooms can stimulate improvement in musical education among young students. Additionally, according to Henryk R. Marcinkiewicz and James C. Moore, who coordinated the study, students without access to keyboards tended to lose interest in music study. Based on observation of two music classes in Jackson, Tennessee, during the 1992-93 school year, the study marked the performances of 94 first graders whose music classes included hands-on use of keyboards, and 80 whose classes lacked keyboards. By the end of the course, 17 percent of the students who had contact with keyboards declared music their favorite subject, compared to only seven percent in the other class. Although cognitive differences between the two groups were less dramatic, Marcinkiewicz and Moore suggested that enthusiasm for music can spill over into other areas of study. "Enjoyment in school work helps to sustain intrinsic motivation that contributes to learning," they noted. "Children who value a school task also perceive school as having a supportive environment."

HOW DO you PLAY this MUSIC ANYWAY?

debut of the *caja*, a baritone drum played by Guillermo Franco R. on "Panama 2000"; "Reminisce," a straight-ahead jazz ballad inspired by playing Gillespie's "Con Alma" late at night; a cerebral piano solo that gels into a propulsive walking figure on "The Awakening"; and "Libre Spiritus," in which *The Journey* leads back home.

Pérez's own journey began when his father gave him bongos and claves. He took piano lessons and later studied at the National Conservatory, but his real school was the family record player, with music paper and pencil close at hand. At ten he began transcribing the piano solos of Lino Frias, Peruchin, and Emiliano Salvador, to whom *The Journey*'s "New Vision" is dedicated.

As a teenager, Pérez joined his father in Edgardo Quintero's orchestra. He played bongos on the salsa numbers and synthesizer on exacting renditions of tunes from *Flashdance* and *Saturday Night Fever* for gigs in dance halls, country clubs, and society parties. "We played salsa, but when the saxophonist would take a solo, his improvisation was full of bebop phrases," he recalls. "At the same time, [pianist] Papo Luca got famous. He is a very special guy because he absorbed all the traditional roots and mixed that up with Bud Powell. The first time I heard him playing" — Pérez scats a bop phrase with a Latin rhythm — "it hooked me right away."

Later, the young pianist dug deeper into jazz and classical studies at Indiana (Pennsylvania) University. Then, after a year at the Berklee School of Music, he dropped out to take Cyrus Chestnut's spot with singer Jon Hendricks. One of the most important lessons of that gig was to keep connected to the blues. "'Put the grease on.' That's what Jon used to say. We don't have minor thirds in Latin music, but after hearing Jon sing so much and trying to imitate his voice, I began to feel comfortable with the blues. It was the same with jazz rhythm. At one point we were playing 'Bye Bye Blackbird' at a concert, and I felt this little thing inside my stomach, like electricity. I knew right there how having that rhythm feels."

Eventually saxophonist Paquito D'Rivera brought Pérez into the United Nations Orchestra, where Gillespie encouraged him to "think of the piano as different textures and colors." The trumpeter also taught Pérez not to step on his notes, to leave the 9ths, 11ths, and 13ths — Gillespie called them the "funny" notes — for the horn. "Dizzy asked me to play less so he would have more choices. He would tell me to just play two, three, or four notes, but not to comp with thick chords all the time."

At this point, Pérez insists that his main challenge is to *not* play complex Latin rhythms as much as he would like to in jazz settings. Fortunately, the similarities of certain aspects of the two styles make it easier to bring the two together. "I can relate jazz triplets to the 6/8 of Afro-Cuban music," he explains. "When you play 6/8 or 12/8, you can swing on top of that, and it works. It's all a matter of relating to dancing. Both musics have African roots in common. With all the North Americans learning Latin and all the Latins learning swing rhythm, we're bound to come up with something different in 20 or 30 years."

—Dave Helland

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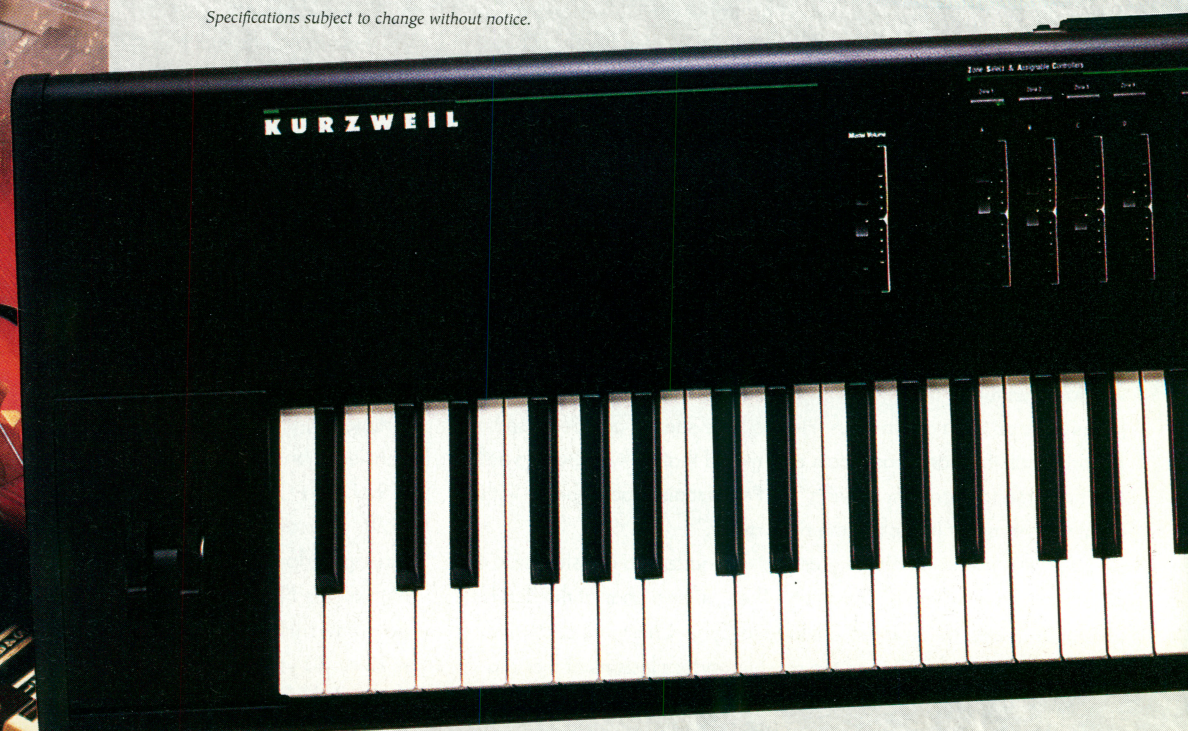

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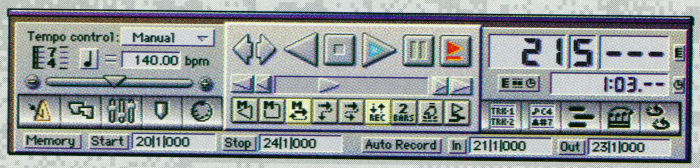

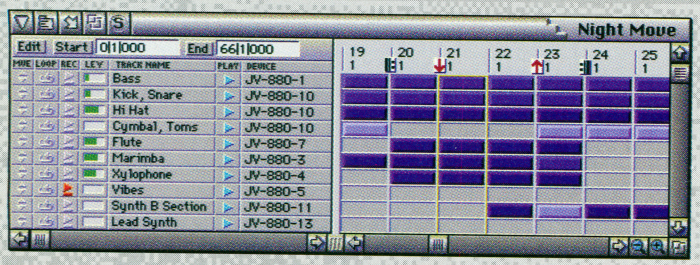

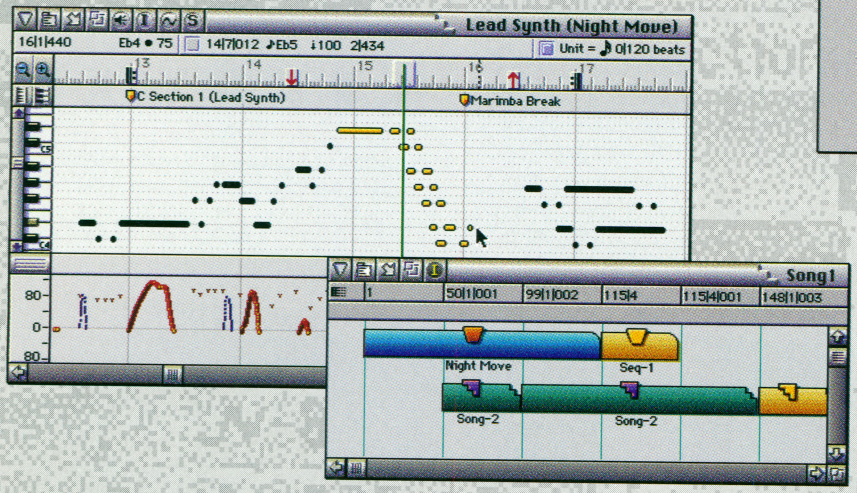

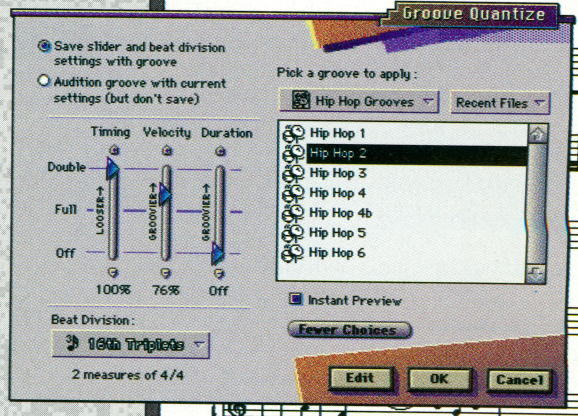

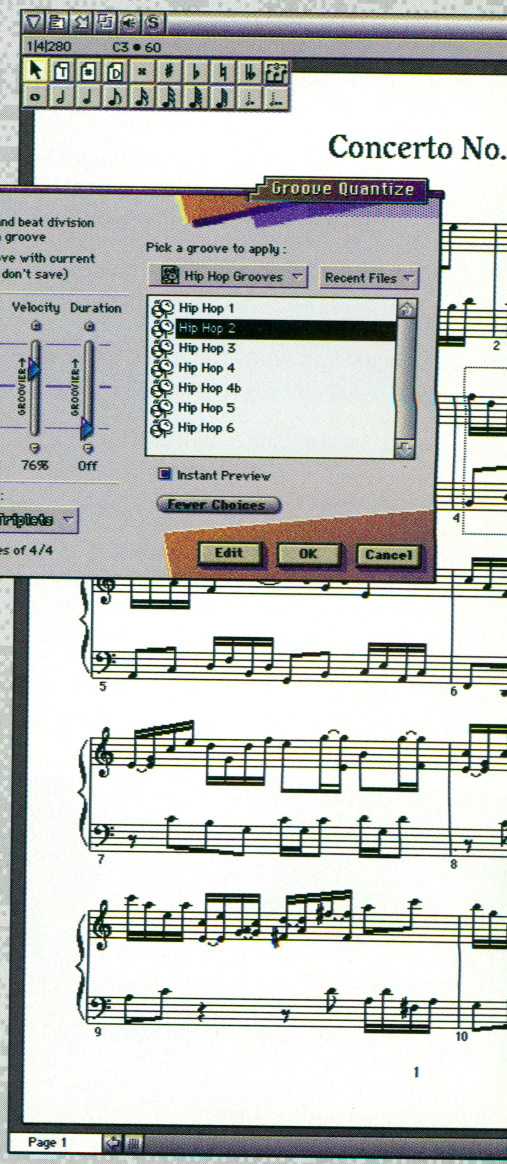

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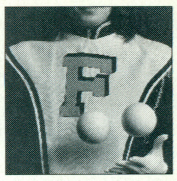

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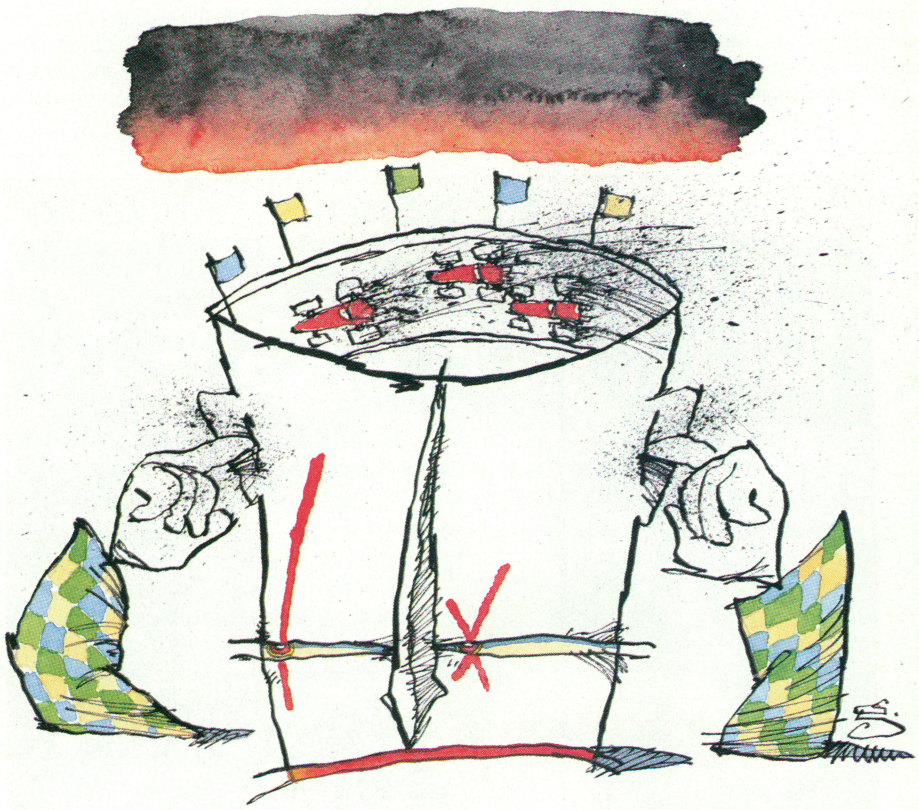

WHAT'S THE LAST REAL SILENCE YOU can remember? Silence inside and out? Silence rich, deep, immense, all-enveloping?

I thought so.

This may be an odd thing to advocate in the pages of a music magazine, but of late it seems to me that you and I and the world could use a retreat from organized sound. Not a long one. Not like the two-year sabbatical from the spoken word that Buckminster Fuller took just after he married, letting his brain fill up with unvoiced thoughts of Dymaxion cars and geodesic domes and synergistic systems (improving the human future while sorely trying his bride's patience, I am sure). Nothing as radical as that. But some brief escape, at least, from the rattling, clanging, kerblanging, zipping, zinging, buzzing, bleeping, gabbling, whooshing, whining, speechifying, rationalizing, just plain bullshit noise that is all around us, all the time, born of our mouths and our machines. And I do mean *all*: I long for silence. I long for a chance to rest and remember the pleasure of listening, as opposed to the current routine of trying to shut everything out. I long for a chance to hear nothing, in order to remember how important hearing can be, and not just walk around trapped between ears struck numb by the ongoing drone.

A day or two, that's all I ask. Maybe a week.

Unless you live alone, without electronics, 50 miles from your nearest neighbor, you know what I'm talking about. We're at sea in an ocean of uproar, most of it our own, and more than a few of us are sinking.

Total silence is impossible, of course. John Cage reported that inside the anechoic chamber that was the world's then-quietest place he could still hear, ever so faintly, a high-pitched whine and a low, deep rumbling. The former was the electrical buzz of his nervous system; the latter, the blood moving through his arteries and veins. Being organized information, even the human body has a signal-to-noise ratio! But I'm not looking for absolute silence, or even close to it. Absolute silence means no molecules bouncing around, which is absolute zero, and my longjohns weren't built for the land of helium popsicles. I would just like enough sonic space to find my way back to the "members only" listening booth inside my skull. The one where the music gets previewed. The *new* music.

I just want to get back to the well. And all that other stuff is in the way.

Could be it's in the way for you, too.

The dynamic balance between sound and silence, between the need to express and the need to take in, is a complex equation. Of late I've seen a lot of people getting it skewed, definitely including myself. I think I first noticed it at a demo rehearsal a few weeks back. The three other musicians there all had vastly greater chops than I have, but despite their skills they were having the damndest time trying to groove with the click and mesh into a cohesive unit. There were lots of possible causes, but at least one was a lack of listening; or, more properly, a distortion of listening. It was as if they couldn't process and understand what they were hearing unless they were playing too. I felt like I was watching a multiple tag-team wrestling match, and in retrospect I have come to believe that they were wrestling, not with each other, but with their own conditioning.

Think about it. These are cats with sharp and sensitive ears, truly primo hearing apparatus, but they are also city-dwellers, freeway drivers, TV-watchers. By virtue of the quality of their biological hardware, they are under even more aural assault than the rest of us poor struggling *H. saps*. The sonic filters, screens, tuneouts, and defenses they've had to develop just to survive are strong ones, and in the way — profoundly in the way — when it comes time for them to let go, relax, and simply listen. It's as though they could only lower their defenses and open their ears by reversing the flow, saying to the world, "Hey, listen to me for a while."

With this theory in mind, next rehearsal I intend to try an experiment. If the same problem appears I won't push the faders up and up in an ever-escalating round. Nope. This time I'm

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Connor Freff Cochran is happily busy with a new partnership and new projects, including forays into that strange place called Hollywood. If you are interested in more of his explorations into creativity and life, just write c/o Crossing Point, 47 Lafayette Circle, Suite 180, Lafayette, CA 94549, and ask for a free copy of Connor's Creation *newsletter.*

ILLUSTRATION: COURTNEY GRANNER

going to put one finger on the master and crank it down. This time I'm going to make it so quiet inside their headphones that my fellow musicians have to lower the drawbridges of their isolated mental castles and invite the sound into their ears, not just ask the gain stage to catapult it over their walls.

I mean, hey, it's not like the biological hardware isn't sensitive. . . .

Pick a sound, any sound — a tree falling in a forest, your favorite synth's coolest patch, a lover's whisper, three teenagers pelting each other with cheap Mexican food outside a Taco Bell. Pick anything. How is it we can hear this stuff? What's really going on inside our heads?

Sound is alternating pressure waves in some medium, such as air. That's Audio 101. But everything that follows in the process is the wildest of magics and still not fully understood. (This is not a big surprise when you consider that there are maybe 200 full-time auditory researchers in the entire world.) It starts when those sound waves oscillate their way to the fleshy outer ear, the pinna. Somehow the curves and curls of the pinna — known to anatomists since the first century A.D. by names like *concha*, *meatus*, and *scaphoid fossa* — emphasize and de-emphasize specific frequencies as soundwaves are funneled into the auditory canal, encoding them with information the brain uses to interpret a sound's horizontal and vertical position. The encoded soundwaves run down slightly less than an inch of skin-lined cartilage and bone before they run smack into the eardrum. The eardrum isn't big, only one-third of an inch across, about the size of Lincoln's head on a penny. Still, it's bigger than where the vibrations are headed, a lot bigger, and so they need to be "geared down" through a series of three bones that loosely connect the eardrum and the cochlea, where the real action of hearing takes place. Jokes about "shell-like" ears are truer than you know, because the cochlea is just that: a tiny, spiral-shaped, fluid-filled shell of bone that contains some 16,000 hair cells arranged in a single outer row and three close-packed inner rows. Each of these hair cells, in turn, has 100 or so itty-bitty fibers at its tip called *stereocilia*, and those stereocilia are connected to each other by even tinier elastic fibers called *tip links*, sort of like the wires that run between telephone poles.

You want sensitive? What kicks the brain's hearing centers in gear is not the eardrum moving, or the bones between the eardrum and the cochlea, or the way the vibration of the fluid in the cochlea makes the hair cells move back and forth. That's all way too gross and slow to capture even the lower range of sound frequencies we hear. What really does the trick is the movement of those infinitesimal stereocilia and tip links against a surface called the tectorial membrane. Trigger signals are sent to the brain whenever these structures move forward or backward by as little as three-thousandths of a degree from rest position.

Prepare to have your jaw hit the floor: *A single degree, on that scale, is only a few atoms across.* Beat a snare drum as hard as you can, or scream at a business partner — the sound you hear is the result of motions measured in fractions of atomic diameters.

It's a bloody miracle, that's what it is, and we don't give it the honor it deserves. We don't listen. We just . . . hear.

But what would happen if everybody were to emulate Bucky Fuller, and stop talking for a while (aside from sparing us the dubious benefits of politics, that is)? What if all musicians played quieter and quieter, retreating into deep silence for a while, in search of their own sound? What if everything would just, for even one day, shut up?

Someday I'd like to see a concert where an artist took real control of the hall and demanded not applause and whistles, or stamping feet and clapping hands, but utter silence. Imagine all the tension there would be in 20,000 held breaths. Imagine the incredible power there would be in the next note that was played, no matter how softly. . . .

Remember this when the noise and hubbub get to you: The word that changes everything need not be loud; and the push that topples nations need not be hard; and the moment after which nothing is ever the same as it was need not be a stunning catastrophe. It just has to be the right word, the right push, the right moment.

Hush now. Place your fingers lightly on the keys. Let them tremble, and listen, listen just as hard as you can, for the right notes before you dare to play. *Shhhhhhhhh. . . .*

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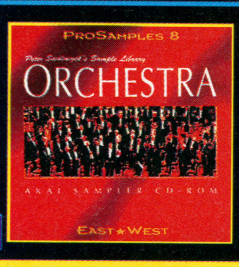

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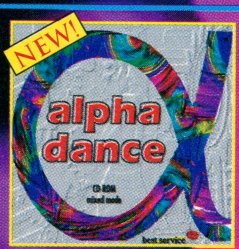

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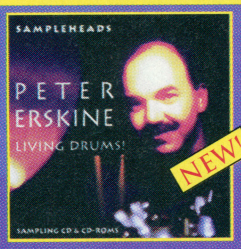

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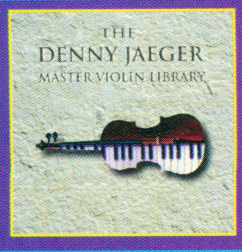

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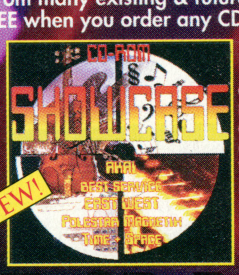

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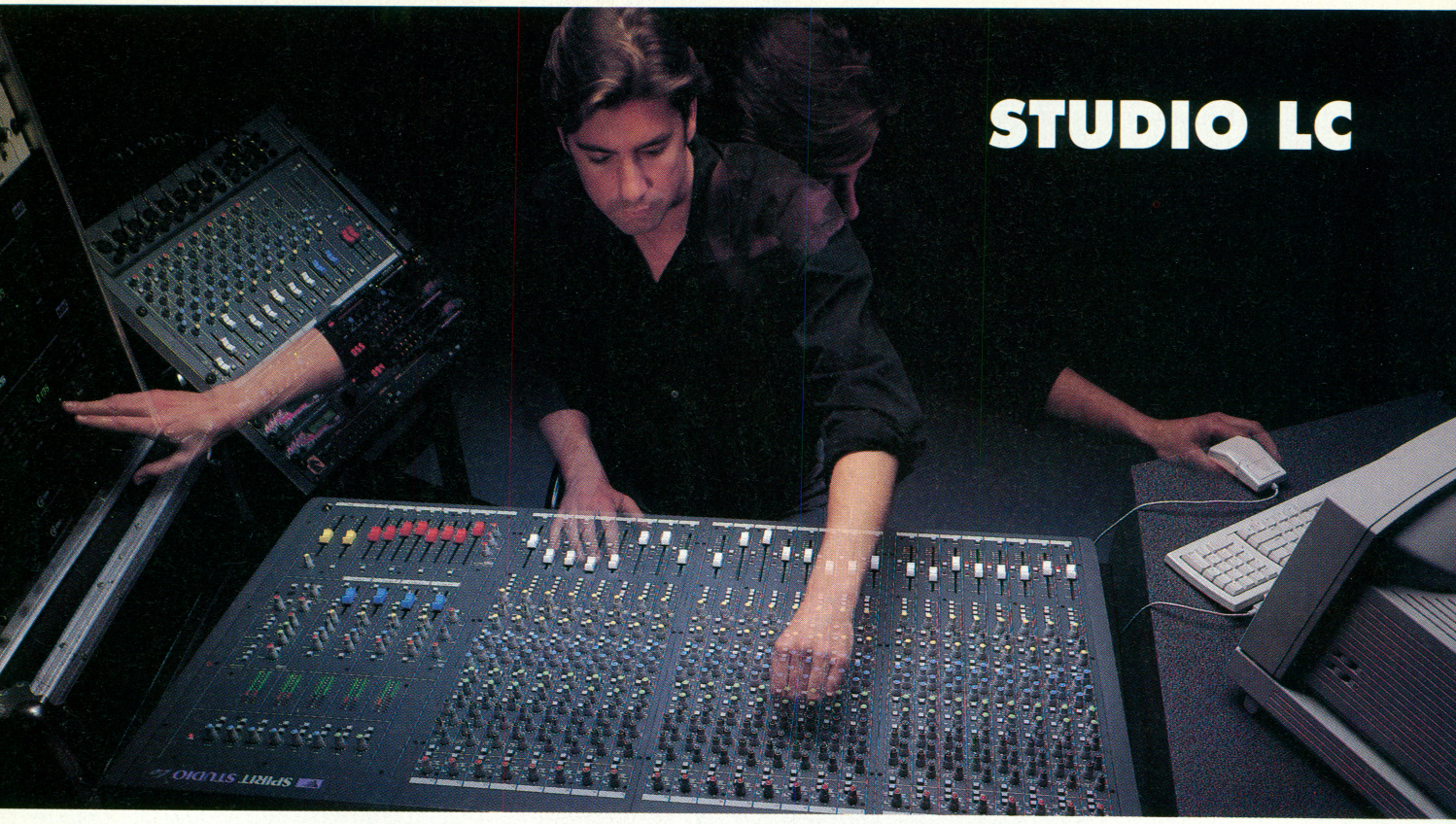

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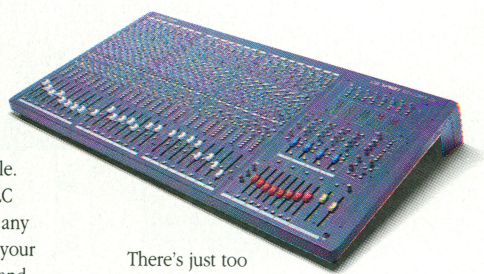

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John Cale/Bob Neuwirth, *Last Day on Earth* (MCA).

This collaboration between ex-Velvet Undergrounder Cale and veteran pop songsmith Neuwirth strikes a fragile balance between the brilliance of the bits from which it is assembled and its uncertain identity as a whole work. Commissioned as a theater piece by Brooklyn's Arts At St. Ann's project, it tells an enigmatic tale of loss, apocalypse, and redemption. References to cabaret, radio drama, Kurt Weill, American folklore, and other narrative musical forms are its building blocks. Sixteen short pieces present themselves, each a model of stylistic integrity, finely formed and smoothly performed. "Angel of Death" is a languorous calypso, "Old China" a mainstream ballad structured along Brian Wilsonian lines. The "Overture" and a subsequent "Instrumental" showcase the often neglected academic compositional side of Cale's persona; it emerges more slyly in the 9/8 rock piano triplets in the verse to "Maps of the World." A plucked banjo pairs with ambient synth pads and arpeggios on several cuts, as symbiotic as the shades that haunt many of these lyrics. Prospectors ruminate, a huckster spiels to a slippery New Orleans beat. You get the point: *Last Day on Earth* is a puzzle with gems for its pieces, a seductive and hypnotic wonder whether assembled or left in disarray.

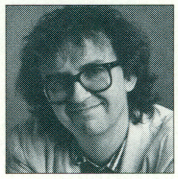
3rd Matinee, *Meanwhile* (Reprise).

A somewhat less ambitious combination, pairing ex-Madonna producer and *Keyboard* columnist Patrick Leonard with former Mr. Mister vocalist Richard Page, gives us *Meanwhile*, a set of 11 catchy songs. In its details — the irregular structures (*i.e.*, a bar dropped or added from the odd section, a riff repeated three times instead of four), the clash of lead and background harmony lyrics, Page's McCartneyish phrasing — 3rd Matinee often recalls the Beatles. Leonard directly echoes the piano on the fade of "Magical Mystery Tour" with his spacey break on "Holiday for Sweet Louise," and his emphatic Wurlitzer chords on "Ordinary Day" fit right into a pattern of Harrison-inspired slide guitar, Fab Four vocal "oohs," and "Eleanor Rigby"-like lyrics. While other cuts are less derivative — or, like the Eagles-inflected "All the Way Home," less Liverpudlian in their references — all of *Meanwhile* is a tribute to quality pop songwriting, which reached its apogee in the hands of Lennon and McCartney. From the jazzy bits on "Freedom Road" through the intriguingly interwoven synth string and sampled voice lines on "Silver Cage," Leonard's playing is a model of disciplined imagination. *Meanwhile* isn't a revolution; they don't want to change the world. But their recollection of those who did is a welcome pleasure, modest yet restorative, an oasis beckoning in a wasteland of tuneless grooves.

Various Artists, *Ethnotechno* (Wax Trax).

Most of these well-crafted tracks succeed at the expense of the materials they incorporate. Siberian "throat singers," Burmese percussionists, Yoruba singers, and other diverse sorts animate *Ethnotechno*. Most often, their contributions are diced and sprinkled like exotic spices over sequenced drum tracks that chug along in 4/4. Tempo is steady as she goes, unaffected even by samples siphoned from traditions that may reject metronomic rhythms. In this and other respects, "ethnic" samples get stripped of their integrity and reduced to mere orchestrational elements, on the level of a synth bleep. One must assume that these artists, like those in the broader realm of world music, consider themselves agents of multiculturalism. Unfortunately, the impact of their work moves in precisely the opposite direction. Despite its inspired details, such as the layered and polyrhythmic pygmy chants on Steel Porn Rhino's "AKA Electric," *Ethnotechno* functions as musical imperialism. Even worse, it can trivialize the cultures it seeks to celebrate. Countless sample manipulators have created a sense of postmodern irony by yanking snatches of TV themes, gut-busting evangelists, and other clichés out of their natural context and stuffing them into the techno straitjacket. The same process is at work here. Our advice, especially to those who seek to celebrate diversity, is to proceed with caution.

ROBERT L. DOERSCHUK



John Medeski, *Lunar Crush* (Gramavision).

The first sound we hear on *Lunar Crush*, a bonehead riff pummelled mercilessly on electric piano, exposes Medeski as a player of unusual temperament. His unadorned voicings and retro instrumentation, coupled with David Fiuczynski's wah-guitar, reflect strong ties to '60s psychedelia, though he stretches far beyond, say, Steve Winwood in his melodic inventiveness. Mostly Medeski plays organ, with only cursory nods toward the conventions of the instrument. When the rest of the quartet plods through a "Slow Blues for Fuzy's Mama," he strains against the idiom: His licks, vicious and frenzied, are more like snarls than quotes from the blues phrasebook. On another straight-ahead cut, "122 St. Marks," he bludgeons through bitonal territory with adventurous lines that melt into growling clusters, spitting percussion, and swirling Leslie. The scariest solo, though, is on "Vog," the opening cut — scary in that Medeski, armed only with his Hammond, demolishes the line between tonality and effect with meticulous fury. The lesson here is that passion and control are not mutually exclusive. Medeski, whose credits include the Lounge Lizards and David Byrne, is the rawest sophisticate, or the most polished anarchist, on today's pop playlist.

Richie Beirach & Andy LaVerne, *Too Grand* (SteepleChase, dist. by Allegro Imports, 12630 N.E. Marx St., Portland, OR 97230).

With ten fingers and plenty of keys to work with, jazz pianists can navigate the changes as freely as their imaginations allow. Of course, when two pilots steer through the same channel at the same time, collisions can happen; the challenge is to chart out parallel paths and hit the open seas cleanly. Beirach and LaVerne tried this before, on last year's *Universal Mind*. But that album was cut on one piano; on *Too Grand*, each has his own instrument. This gives each even more space: easier access to the full keyboard, freedom to play in the same range, and so on. As a result, it's hard to tell who is playing what, but that's to the better. In their collaborative extemporizations, Beirach and LaVerne work together as an ensemble, rather than as a pair of soloists. There's plenty of fireworks, but the best moments on *Too Grand* occur during more exploratory passages. Their rendition of McCoy Tyner's "Passion Dance" takes off at full speed, with a unison sprint through the theme. It's a dazzling display, yet the free-tempo stuff in the middle, in which knotty textures derive from meticulously interactive improvisation, is more impressive in that it demonstrates the duo's ability to move beyond firepower to a more creative level. The point is made clearer still on "Nature Boy," a maddeningly brief composition stretched here to more than eight minutes of examination. *Too Grand* meets our expectations of this pairing, and that says plenty.

Richard Bone, *Quirkwork* (Quirkworks Laboratory, Box 229, Greenville, RI 02828).

Bone's opening cut, "Last Day

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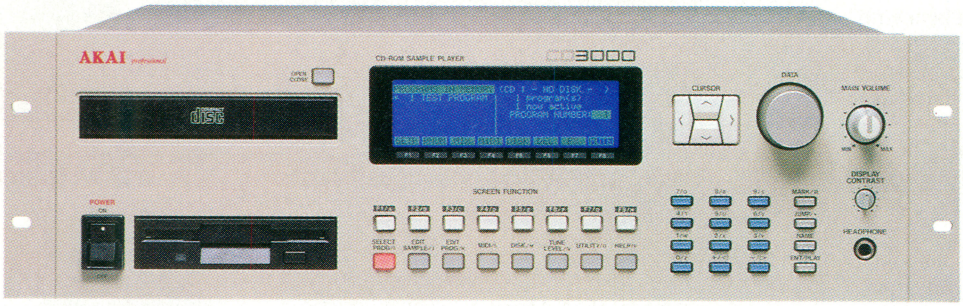

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of Heaven," clues us in: Its pumping chords and swirling arpeggio sequence lay a smooth path into the song, yet the drum tracks lurch through the chorus in a distinctively non-house pattern. In fact, the beats change with each section of the tune — not just in detail, but in basic emphasis. So it is throughout *Quirkwork*: Bone steers close to the commercial fire, then veers off into strange territory just as we think we know where he's going. His spirited manipulations of idiomatic clichés make up for awkward moments in rhythm parts. For all its precisely sequenced detail, *Quirkwork* is rooted more in riff-based rock than trendy techno: "Eveready Strut" is a fury of synth lines, but the organ lick that kicks it off, similar in sound and feel to the Kinks' classic "Come Dancing" motif, is what holds it all together and juices it with classic garage energy. The *Dragnet*-like horn sample motif on "Calling All Cars" makes the Enoesque overdubbed vocal, reminiscent of "Black Water," more surprising and effective. There's even a sampled piano solo, on "Piece of the Action"; while it won't scare Jerry Lee Lewis, it does confirm Bone's grounding in something deeper than last year's dance playlist. Overlook the rough spots; *Quirkwork* is a welcome hybrid of synth-pop precision and flat-out jammin'.

FAST FORWARD

Tangerine Dream, *Turn of the Tides* (Miramar). Further excursions down the path explored on *220 Volt Live*: gorgeous textures, prominent lead guitar from Jerome Froese, compositional aimlessness. The opening cut, an adaptation of the *Pictures at an Exhibition* theme, is stately in its execution and, at least as far as most ELP fans are concerned, audacious in its conception.

Klaus Schulze, *The Essential 72-93* (Caroline). His sounds have changed from filtered synth strings to crystalline digital tinkles, but Schulze's vision has persisted through two decades of fads and fashions. This two-disc retrospective confirms his status as a pioneer of musical multiculturalism and one of the few artists capable of performing genuinely interesting ten-minute, one-chord (more or less) marathons.

Robert Fripp & Brian Eno, *The Essential Fripp and Eno* (Caroline). Eno, the Emperor of Ambience, dons new clothes on "Healthy Colours," the fresh track in this overview of his collaborations with Fripp. Objective listeners will see through this transparent exercise in brain-dead repetition and sample stuttering *à la* Pee Wee Herman's Magic Screen. Stick with the album's older, more integrated works, such as "The Heavenly Music Corporation" and "Swastika Girls."

Ilúvatar, *Ilúvator* (Kinesis, 1430 Wisp Ct., Hanover, MD 21076). Aggressive modern prog rock, with pop overtones. Jim Rezek dextrously executes synth and piano parts, though he could tone down the breathiness in some of his pads and add a harder edge to his solo textures.

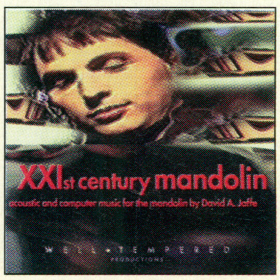
The Fireman, *Strawberries Oceans Ships Forest* (Capitol). The line between ecstasy and torture blurs in this extraordinarily monotonous (or, if you prefer, trance-inducing) project, which consists of one basic motif, with minimal variations, being beaten to death over a weary four-beat bass drum pattern for well over an hour. This unnamed British duo prefers to remain anonymous; somehow we're not surprised.

The Neville Brothers, *Live on Planet Earth* (A&M). Art Neville's fills, comps, and solos are so deep in the pocket on this concert disc that they may never see the light of day again. Credit also goes to supplementary keyboardist Eric Kolb for staying out of Art's way and, presumably, dishing up a few servings of *fonk* himself.

Subdudes, *Annunciation* (High Street, dist. by Windham Hill). The band's easy-going interactivity recalls the best down-home rock of the '70s. John Magnie's Hammond and accordion lines, rich with the spirit of Garth Hudson, bind the loose grooves together.

Bill Cunliffe, *A Rare Connection* (Discovery, 2025 Broadway, Santa Monica, CA 90404). A Thelonious Monk Competition winner makes a strong debut in this septet set. Imaginative arrangements in polymetrical but tuneful head sections set the stage for fiery blowing. Cunliffe plays like a young Corea — one cut is titled "Chick It Out" — but shows promise of defining his own style quickly.

Barton & Priscilla McLean, *Rainforest Images* (Capstone, 252 DeKalb Ave., Brooklyn, NY 11205). Gulls and chimps embellish violin, recorder, didgeridoo, and electronics in three intriguing pastiches. The synth and animal sounds don't always blend smoothly, and meandering parts leave an occasional impression of disorder. But, hey, who said nature had to be organized?



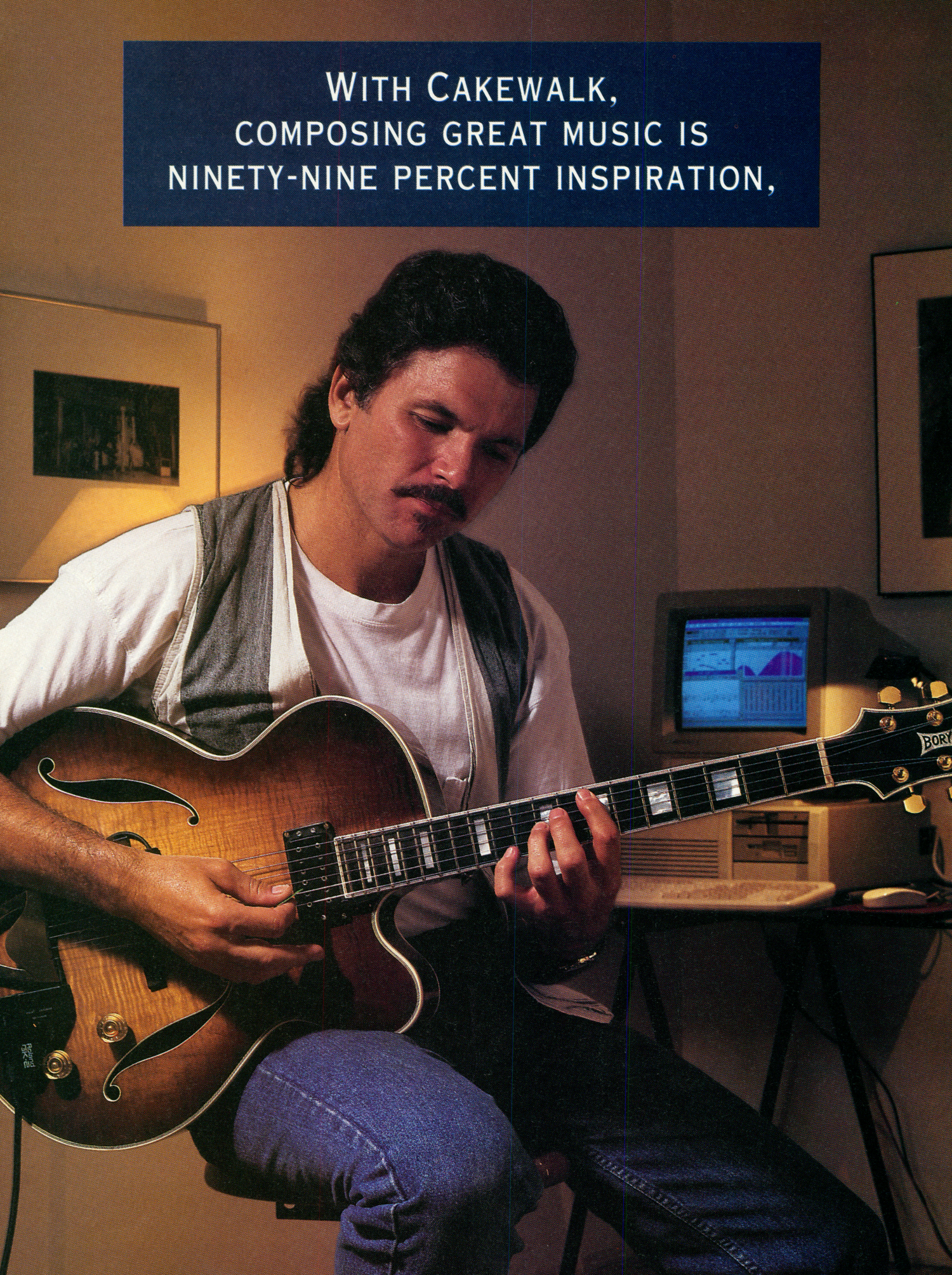
David A. Jaffe, *XXIst Century Mandolin* (Well-Tempered Productions, 1678 Shattuck Ave., Ste. 156, Berkeley, CA 94709). Along with works for real-world mandolin, Jaffe offers *American Miniatures*, in which samples of mandolin and voice are ingeniously manipulated on NeXT computer, and *Silicon Valley Breakdown*, whose synthesized plucked string sounds gleefully obliterate idiomatic preconceptions — perfect for a Max Headroom remake of *Urban Cowboy*.

Asmus Tietchens/Arcane Device, *DBL.FDBK* (Soleilmoon, Box 83296, Portland, OR 97283-0296). Flirtations with tonality (never quite consummated) underscored by traditional dynamics (*i.e.*, big finishes, moody denouements) make these 12 studies in industrial noise surprisingly accessible.

Val Gardena, *River of Stone* (Mercury). Moments of breathless beauty, especially on the Metheny-influenced "Naawa," make *River of Stone* a memorable work. Keyboardist Christopher James comes up with textures so rich and structures so finely crafted that you hardly mind Hans Teuber's Kenny G-like soprano sax whines.

Gonzalo Rubalcaba, *Rapsodia* (Blue Note). The Cuban whirlwind's blinding yet precise piano lines thread through tight quartet arrangements, along with Zawinulesque synth pads and modal motifs. This emphasis on arrangement and structure compensates for the shortage of the sort of free blowing Rubalcaba unleashed on his previous trio releases.

Paul Hardcastle, *Hardcastle* (JVC). Textbook MOR funk. Hardcastle's tasty synth work, precisely shaded textures, and sprightly solos don't quite overcome the deadening effect of predictable R&B voicings and tedious ballad vamp sections.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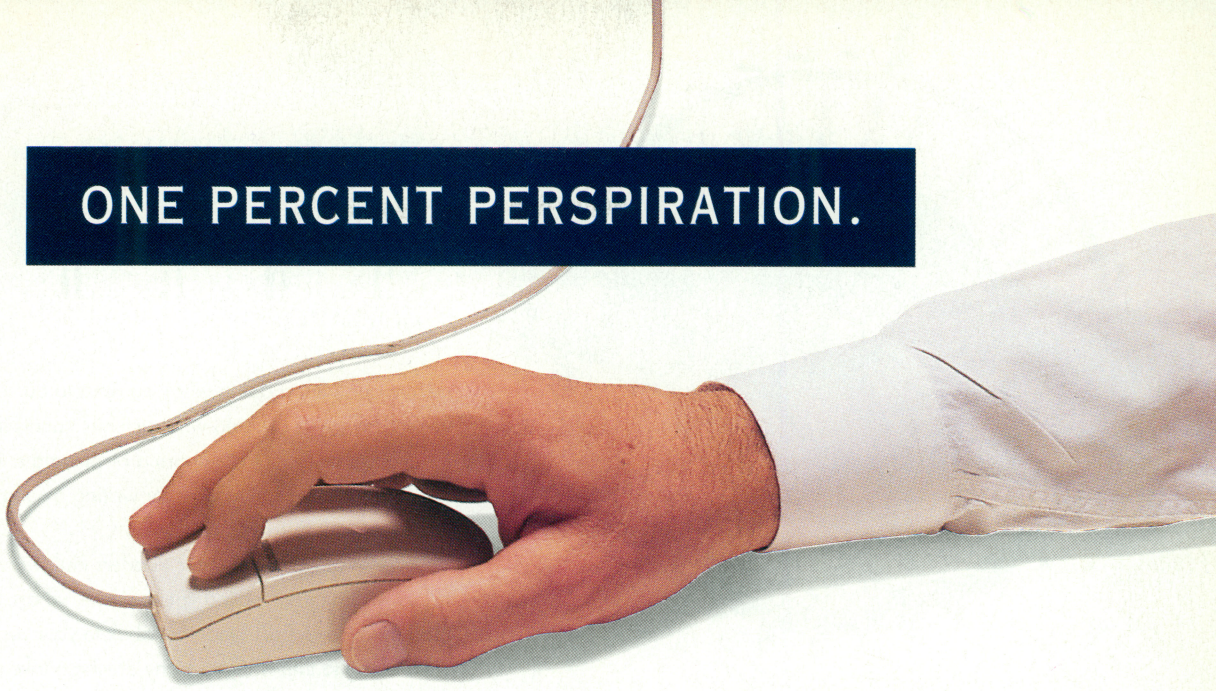

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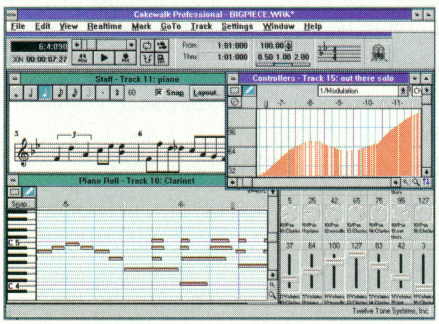

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18th ANNUAL KEYBOARD READERS POLL AWARDS

With Howard Stern throwing his . . . uh, let's say his hat into the ring for governor of New York, with Tonya Harding contemplating a career in professional wrestling, with our president drowning in Whitewater, with network news melting down into a steaming blob of Woody vs. Mia, Joey vs. Amy, etc., who can honestly say that the music business is more ridiculous than real life? Compared to all the nonsense around us, ours seems almost a monastic discipline: We study jingle scores like monks squinting at Scripture, and stare at manuals, the mandalas of our trade, until enlightenment sets in.

So maybe we weren't so crazy to quit law school and join a bar band. Most of us got into this racket for the purest of motives, aside from sex and free beer. For all of our jaded affectations, we are among the few people in this strange world who have managed to devote our lives to doing what we want to do. And our most basic ideas of who we are and what actually counts in life trace back to the pleasure we get from hearing or playing a killer solo, or piecing together just the right groove, or writing a song that somehow says what we want to say.

For the 18-year life of our Readers Poll, we've been asking you to tell us whose music moved you the most, whose product struck you as most innovative. Each year we tabulate your responses and send them along to the winners, many of whom take a few moments from their frantic whirl of hot tub parties, shmoozfests, and Czerny drills to let us know how much your votes mean to them. (It's true — not the hot tub bit, of course. We've got letters on file from Vladimir Horowitz, Keith Emerson, and many other past winners, telling us that the respect they receive from you, their peers, is invaluable to them.)

The ballot for this year's poll appeared in our Feb. '94 issue. It contained a few new categories, and the nominees were a mix of fresh faces and old favorites. The list of winners reflected a degree of old and new too, with some predictable results and a couple of surprises. We'll be sending awards — the usual diamond-encrusted grands, or is it the solid platinum hard disks this year? — to the winners, along with your thanks for jobs well done.

Thanks to you, too, for keeping your ears open to new music. Stay in touch, keep the faith, and check out your choices for the best of '93.

OVERALL BEST KEYBOARDIST

Winner: Keith Emerson

Second: Jordan Rudess

Third: Chick Corea

Emerson maintained his stranglehold on our top category, though newcomer Rudess gave him some competition. Corea came in at third, slightly ahead of Bruce Hornsby, Herbie Hancock, road warrior David Rosenthal, and Dream Theater's Kevin Moore.

BEST NEW TALENT

Winner: Jordan Rudess

Second: Kevin Moore (Dream Theater)

Chin up, Jordan Rudess! You're the winner in this year's vote for Best New Talent!

RON AKIYAMA

Third: A. J. Croce

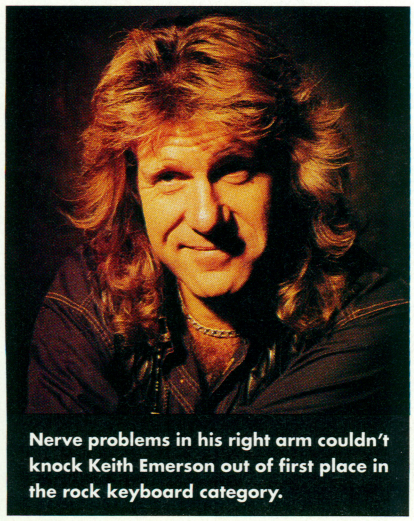
On the strength of his debut album, *Listen*, Rudess blasted into first place with nearly twice as many votes as runner-up Kevin Moore. Jazz hipster A. J. Croce nosed past techno troubador Moby for third place.

BEST KEYBOARD ALBUM
Winner: *Paint the World*, Chick Corea
Second: *Live*, Emerson, Lake & Palmer
Third: *The Red Shoes*, Kate Bush

Corea and his Elektric Band won a close race, with ELP's concert set and Bush's latest art-rock effort close behind. Bruce Hornsby's *Harbor Lights* was in the running too, just a few votes behind *The Red Shoes*.

BEST ROCK KEYBOARDIST
Winner: Keith Emerson
Second: Paul Shaffer
Third: Chuck Leavell

The King held onto his throne, as Emerson coasted to another easy victory. Nightly exposure on the Letterman show and a rockin' solo album gave Paul Shaffer a solid grip on second place, with session mainstay Leavell coming in third. Rick Wakeman and Alan Wilder of Depeche Mode were next in line.



JAY BLAKESBERG

Nerve problems in his right arm couldn't knock Keith Emerson out of first place in the rock keyboard category.

RIC KASNOFF

Chick Corea's *Paint the World* won the keyboard album race with flying colors.

BEST HARDCORE/ TECHNO KEYBOARDIST
Winner: Trent Reznor (Nine Inch Nails)
Second: Front 242
Third: Moby

It was a photo finish, with Reznor edging Belgian techno pioneers Front 242, far ahead of Moby, Alex Christiansen of U96, and the rest of the alternative pack.

BEST JAZZ KEYBOARDIST
Winner: Lyle Mays
Second: Joey De Francesco
Third: Jimmy Smith

Through sessions, solo projects, and Pat Metheny gigs, Mays won your vote as the year's best jazz keyboardist. Two Hammond traditionalists — the new school's Joey De Francesco and the godfather, Jimmy Smith — placed second and third, with T Lavitz and Tom Coster close behind.

REX MILLER

Jazz virtuoso Keith Jarrett made the leap to the top of the classical keyboard heap.

BEST CLASSICAL KEYBOARDIST
Winner: Keith Jarrett
Second: Igor Kipnis
Third: Anthony Newman

Jazz veteran Jarrett, the new kid on this block, scored a decisive surprise win. Veteran harpsichordist Kipnis was far behind in second place, with Newman ensconced

in third, ahead of Kathy Geissler.

BEST DANCE KEYBOARDIST
Winner: Jeff Lorber
Second: Cypress Hill
Third: Jimmy Jam

The dance contest was no contest: Top-call producer and *lickmeister* Lorber was way ahead of the sample gangstas in Cypress Hill. Veteran Flyte Tymer Jimmy Jam finished a close third, followed in close order by Jellybean Benitez, De La Soul, Tony Toni Toné, and David Cole of C&C Music Factory.

BEST NEW AGE KEYBOARDIST
Winner: Kitaro
Second: Suzanne Ciani
Third: Yanni

Kitaro wafts to the top of this year's list of soothing synthesists, with Ciani and Yanni . . . Ciani/Yanni, Ciani/Yanni, aummm, er, uh . . . next in line. Fourth place went to Ray Lynch.

BEST ELECTRONIC KEYBOARDIST
Winner: Brian Eno
Second: Jean-Michel Jarre
Third: John Tesh

Brian Eno, the guru of electronic ambience, squeezed past pioneering pop synthesist Jean-Michel Jarre and that master of galloping sequences and on-camera charm, John Tesh. Tangerine Dreamer Edgar Froese won a tight race with former colleague Klaus Schulze for fourth place.

More than just a sideman, David Rosenthal is your choice for top hired gun of '93.

JAY BLAKESBERG

BEST CLASSICAL PIANIST
Winner: André Watts
Second: Emanuel Ax
Third: Alicia de Larrocha

Chalk up another impressive win for Watts, who swept into first place with well over twice the tally of Emanuel Ax. De Larrocha took third place, a handful of votes ahead of the young Russian dynamo, Evgeny Kissin.

Bruce Hornsby heads this year's rock piano pack.

GREG GORMAN

BEST JAZZ PIANIST
Winner: Chick Corea
Second: Keith Jarrett
Third: Kenny Kirkland

A busy touring schedule and a knockout Elektric Band album helped propel Corea to a sweeping victory. Jarrett scored less than half as many votes, but that was enough to win a lock on second place. *Tonight Show* mainstay Kirkland outpaced Dick Hyman and McCoy Tyner for third place honors.

BEST ROCK PIANIST
Winner: Bruce Hornsby
Second: Billy Joel
Third: Patrick Moraz

Hornsby and Joel each released a hit album, launched a marathon tour, and outdistanced all competitors in the rock piano tabulation. Once the dust cleared, Hornsby was the winner by a hair. Despite some delays with getting new product released, Moraz outpaced Mac Rebennack for third place.

BEST FILM/TV SCORE

Winner: *The Nightmare Before Christmas*, Danny Elfman

Second: *In the Line of Fire*, Ennio Morricone

Third: *The Piano*, Michael Nyman

This one strikes us as an upset. Nothing against Elfman or Morricone, whose dynamic scores wound up only a few votes apart in a race for top honors. But Nyman's luscious work finished further behind than we would have predicted. And the fourth-place finish for Dave Grusin's solo soundtrack for *The Firm* confirms that this wasn't the year of the piano in Hollywood.

BEST HIRED GUN

Winner: David Rosenthal

Second: Jeff Lorber

Third: Greg Phillinganes

Years of hammerin' with Whitesnake, Billy Joel, and countless headliners earned Rosenthal overdue recognition as this year's top-call session/stage keyboardist. Lorber came in a solid second, while Phillinganes edged past fellow-Angelino Steve Porcaro for third.

WARREN HUKIL

The Korg i3 won this year's race for Best New Music Hardware.

BEST ACCORDIONIST

Winner: Angelo Di Pippo

Second: William Schimmel

Third: Stanley "Buckwheat" Dural

After languishing in the shadows of classical and zydeco players, jazz charged back into the accordion spotlight, thanks to Di Pippo's swinging club gigs and solo CD. Schimmel slipped from last year's win into a fairly strong second place, with Dural squeezing past fourth-place finisher C. J. Chenier.

BEST NEW MUSIC HARDWARE

Winner: Korg i3

Second: E-mu Vintage Keys

Third: Digidesign Session 8

A solid win by Korg's auto-accompaniment synth and a strong showing by E-mu's celebration of classic sounds seemed to mark this as the year of retro chic. But with Digidesign's sleek tapeless recorder/mixer a breath behind in third, we're not so sure. Fourth place went to Yamaha's QY20 micro synth/sequencer.

BEST NEW MUSIC SOFTWARE

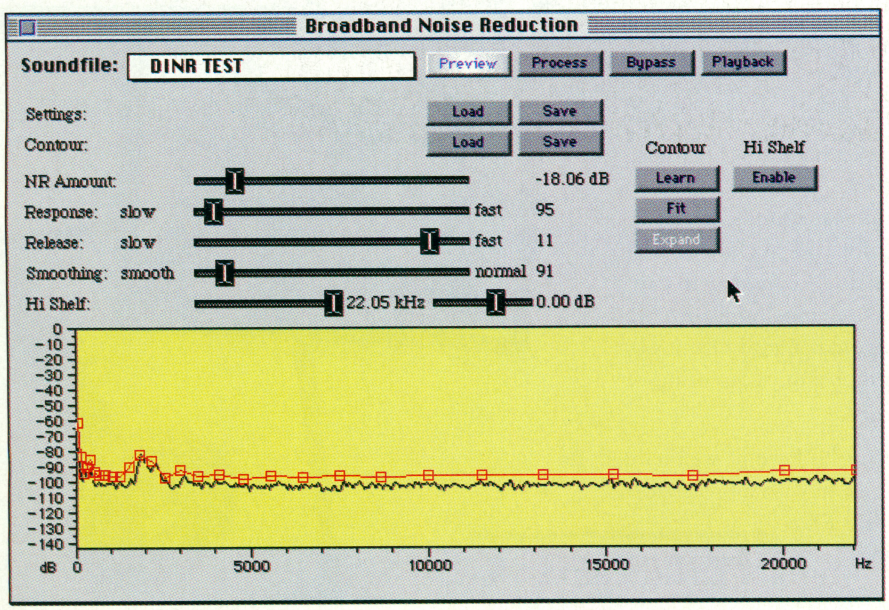
Winner: Digidesign Intelligent Noise Reduction (DINR)

Second: Emagic Notator Logic Audio

Third: Jupiter Systems Infinity

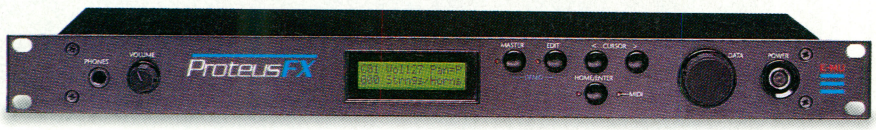
It's DINR time, with Emagic's Logic Audio and Jupiter Systems' sample looping software outlasting Musitek's Midiscan in a fairly close four-way competition.

Dig into Digidesign's DINR, your choice for Best New Music Software.



Great Sound Ru

The Affordable Proteus FX



You know Proteus®. The family of MIDI sound modules from E-mu®. The superb 16-bit digital samples. The unsurpassed collection of pop/rock, orchestral, percussion and world-beat sounds. The industry's clearest, most straightforward user interface. Well, meet the new kid on the rack: Proteus FX. It's not another Proteus sound set—it's a dream-come-true for home musicians and performers held captive by a limited budget.

The idea is simple. Start with a stunning 8MB set of 16-bit, CD-quality digital samples based on the Proteus/1 Pop/Rock and Proteus/2 Orchestral sound sets and add an incredible grand piano sample. Add built-in effects processors for tailoring those sounds to meet your own musical needs. Allow for extensive programmability to customize or create entirely new sounds. Harness this incredible power with the industry's most straightforward, easy-to-use interface. Streamline the feature set—maximize functionality. And house it all in a rugged, road-worthy metal package. What you've just created is a great sounding, powerful MIDI sound module that fits into everyone's budget. What you've just created is the Proteus FX.

But don't be mistaken. If you thought we were talking about a stripped-down model with just a handful of sounds, you don't know E-mu. Only the best features merit the Proteus name. Proteus FX features 512 great preset sounds coupled with a variety of built-in digital effects for you to choose from including reverb, chorus and delays. And of course, you can count on 32-voice polyphony, 16-MIDI channel multi-timbral operation and stereo outputs to keep you at the forefront of musical capabilities whether you're composing, sequencing or performing live.

So, if you thought you were going to have to wait a long time before you could upgrade your system with a professional-quality sound module, think again. Proteus FX is here today—and it's lean and mean.

ProteusFX

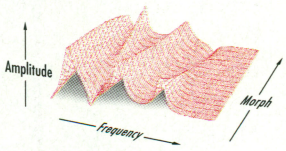
ns in the Family.

The Incredible UltraProteus

If you're serious about getting great Proteus sounds and want the benefit of advanced synthesis and expandability, take a look at UltraProteus. It's every Proteus you've ever dreamed of—in a single rack-space module. 16MB of 16-bit samples based on the sound sets from Proteus/1 Pop/Rock to Proteus/2 Orchestral to Proteus/3 World. It even includes hot new drum sounds and wave forms as well as the superb Proformance® grand piano sample. You simply can't buy another MIDI instrument that has a larger variety of digital samples.

Sure, UltraProteus is packed with fantastic sounds, but it's much more than just sounds—it's what you can do with them!

Start with proprietary E-mu Z-Plane™ filter technology for the kind of expressive control you've never experienced in a MIDI instrument. (That graph to the right actually has something to do with how it works.) Add an extensive set of digital effects including reverb, chorus and flange to impart depth and ambiance to your MIDI music. Throw in a RAM/ROM card slot allowing for even more preset sounds down the road, and you have the most feature-rich, expandable sound module available anywhere.



Z-Plane Technology

While traditional synthesis technology offers a single 4-pole lowpass filter, Z-Plane technology allows you to interpolate sounds through multi-dimensional 14-pole filters in real time.

Of course, we didn't forget essentials like 32-voice polyphony, 16-MIDI channel multi-timbral operation and 6 audio outputs, but when you stand in awe of its 512 presets, you'll know this Proteus is master of the house.

UltraProteus

The Proteus FX and UltraProteus. Two new members of the esteemed Proteus family. Run down to your dealer for a formal introduction.

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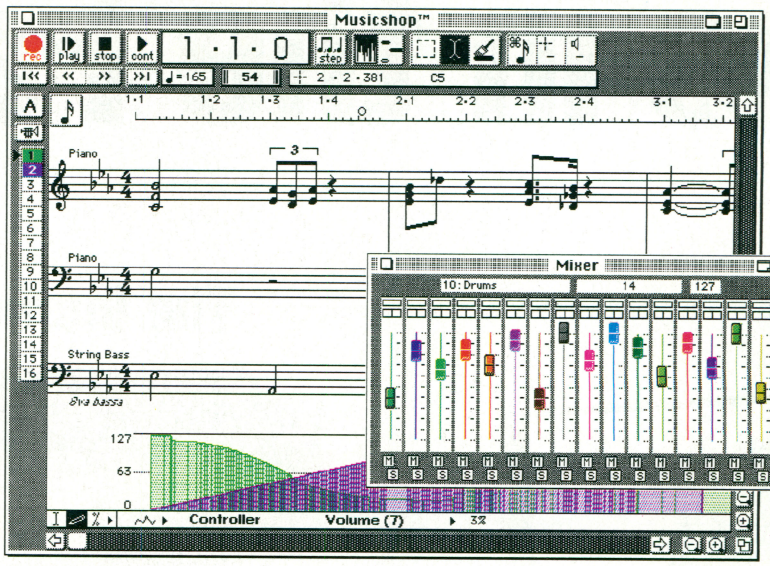

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The Continuing saga of the return of the

Son of NAMM

PART II: THE SEQUEL

Illustration: Jimmy Fish

-Digital & Analog Recording

-Mixers & MIDI Stuff

-Drum Machines

By Michael Marans

When last we left our hero and heroine, they were dangling precariously on the edge of an equipment overload, the crushing weight of specifications and feature details straining their already feeble grip on reality. A full month has gone by since then. Do you suppose salvation is at hand? No way! First our dynamic rangers must prove themselves by battling the mighty digital multitrack hard disk. Next comes a set-to with the dreaded multitimbral drum computer, followed by a terrifying bout with a horde of

Son of NAMM

stampeding MIDI devices.

In just a moment we'll be joining our hapless heroes as they try to free themselves from a harrowing ride on the subgroup bus . . . but first, a message from our sponsors.

DIGITAL & ANALOG RECORDING

Our last report (May '94) was filled with news of companies that have software designed for use with **Digidesign** products. This month we thought it might be nice to tell you about some products that Digidesign itself actually makes. First up: Session 8 for the Macintosh ($3,995). The system consists of an audio interface with analog and digital I/O, a NuBus card, and software. Features include eight tracks of direct-to-hard-disk recording and editing, multi-channel digital mixing, computer-controlled input patching, and MIDI integration. Once you've done your music and you're ready to cut a CD, check out MasterList CD ($995), professional CD mastering software designed for use with CD recorders, DATs, or 8mm SCSI tape drives. The program allows the generation of Red Book-compatible glass master-ready CDs, complete with PQ subcodes, from a playlist of Macintosh-based audio files.

Finally here: Digidesign's ADAT Interface ($995), which allows direct digital audio transfer between the Alesis ADAT and Digidesign's Session 8 and Pro Tools systems. Synchronization between the ADAT and the hard disk systems is sample-accurate, allowing the two systems to work together as one. An added bonus: The interface finally makes archiving large, multitrack hard disk audio files a cost-effective proposition.

Feeling out of sync? **Mark of the Unicorn** might have just what the doctor ordered. They introduced the Digital Time Piece ($995), a digital audio synchronizer that provides sample-accurate lock for random-access and tape-based digital audio systems. Supported sync formats include MIDI Machine Control, word clock, SMPTE, ADAT, video, and Sony 9-pin.

When it comes to recording, there never seem to be enough tracks. **OSC** has one solution: the 8-Track Tool for Deck II ($129). The software, which allows you to get eight audio tracks out of a four-channel Pro Tools system, runs in conjunction with Deck II, adding four more faders to the mixing window. Macintosh AV users take note: Version 2.1 of Deck II ($399) ups the number of available tracks to eight on an 840AV and six on a 640AV — no extra audio cards required. Other enhancements include a larger waveform editing display, importing and playback of MIDI files and tempo maps, support for OMS, MTC output, and real-time pull-up and pull-down sample rates.

Looks like this hard disk recording thing is going to catch on. Latest entry in the sweeps: The Vestax HDR-6 digital multitrack recorder.

The DR-5 Dr. Rhythm Section from Boss catapults the concept of a drum machine to new heights.

Soundscape Digital Technology announced the SSHDR1 multitrack hard disk recorder ($3,250), a rack-mount system with an IBM-PC/Windows front end. Each unit offers four tracks of recording, 16-bit delta-sigma 64x oversampling A/D and 18-bit delta-sigma 64x oversampling D/A, analog and digital I/O, and room for two 1.2 gigabyte drives (not included). Multiple units may be stacked to create a 64-track system. Other functions include non-destructive editing, eight real-time parametric EQs, real-time non-destructive fades, fader automation, and a variety of synchronization modes.

Taking a cue from Akai's successful hard disk-based DR4d recorder, **Vestax** introduced the six-track HDR-6 and four-track HDR-4 digital multitrack recorders ($2,300 and $1,880, respectively). Each unit features 16-bit 64x oversampling A/D and D/A, an on-board hard disk with room for a second drive, optical and S/PDIF digital I/O, built-in digital mixer with three-band EQ and four aux sends and returns, and a variety of track editing functions, including delete, copy, and move. Multiple HDRs may be linked and synchronized, with no limit as to the number of units that may be connected.

Ready to plunk down some *big* bucks? Drop by your local **Fostex** dealer for a look at the Foundation 2000, an integrated digital recorder, editor, and mixer. The rack-mount unit offers 16 audio channels summed to eight output tracks or dual stereo mix outs, a removable front panel, and an internal 540Mb hard drive. Six units may be connected to create a 96-channel system. Now about those bucks. A basic system will only set you back $29,995. Too steep? Maybe you should check into the company's X18H four-track cassette recorder ($499), which features double-speed capability and battery-powered operation. If you need more input channels, you can opt for the model X28H ($699).

New from **Spectral Synthesis** is the AX-S (under $1,000), a stand-alone A/D and D/A unit. They also announced the Q-Card DSP accelerator board ($1,125) for their Synth-Engine system. The card reportedly boosts DSP power 900%, from 20MIPS to 180MIPS. Yes, Virginia, you can add multiple Q-Cards to your system.

Last up: **Roland**, who unveiled version 2.0

Mark of the Unicorn wants to help you stay in sync with the Digital Time Piece, which provides sample-accurate lock for hard disk- and tape-based digital recorders.

firmware for their DM-80 digital recorder. The upgrade adds a number of new features, including group move, recovery of unused memory, mixer snapshots, and threshold editing. Version 2.0 of the DM-80 Multitrack Manager system for the Macintosh was also announced. The software adds the ability to lock up to four DM-80 recorders together, making for a 32-track system. Except for a small shipping and handling charge, both upgrades are free to registered owners.

Lastly, from Yamaha comes the new MT120S ($579) cassette multitrack recorder, which offers four record tracks, a five-band graphic equalizer, stereo sub in jacks, and dbx noise reduction. A sync switch allows the unit to be synchronized with MIDI gear.

The Akai MPC60 gets a complete overhaul and becomes the new MPC3000. New features include 16-bit stereo sampling and the ability to read S1000/3000 sound library disks.

RHYTHM RAMPAGE

For many drum machine users, the **Akai** MPC60 was "the stuff." Now a new model, the MPC3000 ($3,699) will take over honors as Akai's flagship MIDI production center. The MPC3000, an integrated drum machine and MIDI sequencer, features 16-bit stereo sampling (an optional digital input is also available), 2Mb RAM (expandable to 16Mb), 32-note polyphony, dynamic filtering, cut/paste sample editing, a SCSI interface, and the ability to read S1000/3000 sound library disks. According to Akai, the MPC3000 feature set — with the exception of 16-bit sampling and increased polyphony — will be made available as an upgrade for the MPC60.

Boss has updated the Dr. Rhythm from a simple drum machine to a full-fledged rhythm accompaniment device. The new DR-5 Dr. Rhythm Section ($495) has 256 onboard sounds, including drums, guitars, basses, piano, and synth, a four-track sequencer, preset accompaniment patterns, an amp simulator, and a built-in tuner. The input pads are configured fretboard-style, allowing easy input of notes and chords using traditional guitar fingerings.

The folks at **KAT** have a new product that's of particular note to keyboardists. The malletKAT PRO ($1,999) is a three-octave mallet controller (expandable to five octaves) with a variety of MIDI master controller functions. Owners of the drumKAT take note: Version 3.5 software is now available ($39 with manual addendum; $45 with all new documentation). New features include melodic modes, transpose modes, selectable polyphony per pad, a hi-hat control input, programmable click, and transmission of song select messages.

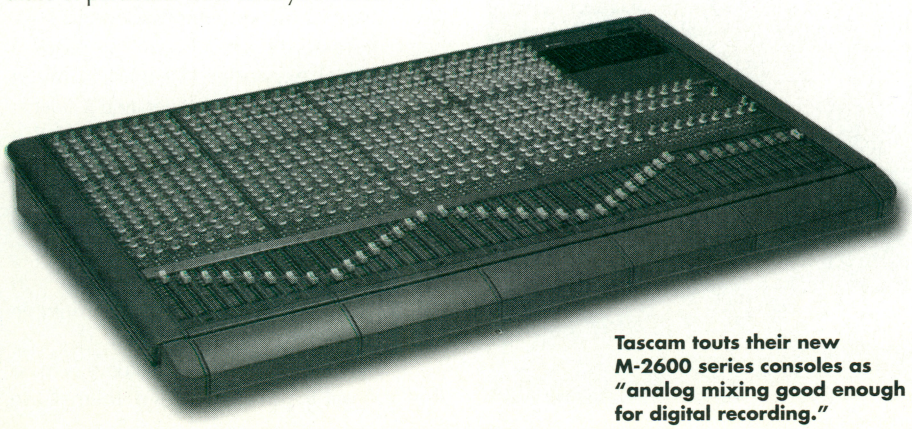
MIDI MANIA & MISCELLANEOUS MADNESS

MIDI Solutions was on hand with the QuadraMerge ($129), which merges four MIDI ins into one MIDI out. **ForeFront Technology** (distributed by **Music Industries Corp.**) had the FT-8 MIDI merger ($149.95), which merges two MIDI ins into one MIDI out. They also showed the FT-5 MIDI thru ($69.95), configurable as 1 in x 8 thru or 2 in x 4 thru, and the FT-3 Patch Commander Plus ($129.95), which can transmit MIDI program change commands, clock data, and user defined messages, as well as check MIDI-in data. **MIDIman** offered the MIDI Thru 1x4 ($59.95) self-powered thru box, the MiniMacman 1-in/1-out Macintosh MIDI interface ($39.95), the Merge 2x2 2-in/2-out MIDI merger ($99.95), and the Portman 2x4 ($179.95), a 2-in by 4-out parallel port MIDI interface for the IBM-PC. Working in TV? Check out the Video Syncman ($649.95) universal timecode translator. Supported formats include VITC, LTC, and MTC. A built-in screen burner is also featured.

Here's one for the "oops" file, as it should have been included in last month's report: **Yamaha** announced the QY8 Music Sequencer, a low-cost ($299) version of their popular QY10. The new unit features a 28-note polyphonic tone generator, eight-way multitimbral operation, 50 preset accompaniment patterns, a 6,000-note four-track sequencer, and a totally redesigned user interface.

Bad cables? You'll know with the **DOD** 210 cable tester ($59.95). The company also showed the 275 Active Direct box ($79.95) and the R-828 power distribution and light module unit ($159.95). New to the power and light module market is **dbx**, who introduced the model 115 ($159). They also debuted the PB-48 patchbay ($179), which features 24 pairs of fully-balanced normalled points in a single rack space, and unveiled an addition to their Project 1 series, the 242 parametric equalizer ($299).

Here's one of our favorites: Keyboard Karaoke, from **Karaoke Display Systems** (distributed by **L.B. Music**) is an LED device used to display song lyrics in sync with the playback of MIDI sequences. Two sizes are available, one for those up close and personal



Tascam touts their new M-2600 series consoles as "analog mixing good enough for digital recording."

singalongs, and the other for concert-sized revelry (prices to be determined).

All-in-one boxes are nothing new to keyboardists, but this one really caught our eye. Called the Toolbox DI ($579), this single-space rack-mount unit from **Third Coast Labs** contains a chromatic tuner (complete with microphone), a digital metronome, front and rear rack lights, a seven output power conditioner, and two active direct boxes. Less dramatic but useful nonetheless is their CP-3 "super clean" power conditioner ($339), which offers ten conditioned outlets, surge/spike protection, a voltmeter, and front and rear rack lights. Its hippest feature is that two of the outlets receive power four seconds after the unit is powered up. Plug your amps into these, and your speakers won't be subjected to those nasty pops some synths make when they're turned on.

JLCooper was displaying the Cuepoint Universal Autolocator ($849.95), which you can use to control tape decks and MIDI Machine Control-compatible devices. Features include 99 locate points, control over four devices simultaneously, SMPTE read/write, SMPTE-to-MTC conversion, remote track record-enabling, and the ability to program ADAT track and machine offsets.

For the soldering gun set, **Stage Electronics** was offering a kit called the MIDItools Computer (under $200), which, when assembled, can perform a variety of MIDI functions, including data filtering, thinning, and monitoring, keyboard mapping, and message transmission. Details for building and using the project can be found in the new book *Digital Projects for Musicians*, co-authored by frequent *Keyboard* contributor Craig Anderton.

The DMP9 programmable digital mixer from Yamaha offers digital I/O, built-in digital multi-effects processors, and 50 scene memories recallable via MIDI.

And for the hearing-conscious (and if you're not one of them, you should be), **Doc's Proplugs, Inc.** introduced Doc's Proplug ($8), a protective earplug for musicians. Designed to attenuate high frequencies without frequency distortion, the plugs are vented to allow some sound to come in while still providing protection. The company also introduced Doc's Protune ($15), an "earphone enhancer" that's used in conjunction with standard bud-style earphones. The device provides the listener with a more secure fit, which results in increased gain and enhanced bass frequencies. The upshot is that the user can listen to and enjoy the music at lower volume levels, which helps prevent hearing damage.

MIXING IT UP

If you're one of those folks who wants their signal path to remain entirely in the digital domain until it hits the listener's ears, check out **Yamaha**'s new DMP9 programmable digital mixer, which features digital I/O, built-in digital multi-effects processors, 16-bit A/D and 18-bit D/A, 50 scene memories recallable via MIDI, two-band parametric EQ per channel, and a BNC connector for synchronization to external word clock. The unit is available in eight-channel ($3,199) and 16-channel ($4,199) configurations. Also debuted: the M2000 series consoles, available in 16-, 24-, 32-, and 40-channel configurations ($10,499, $12,999, $15,499 and $17,999, respectively). Features include eight subgroups, six aux sends per channel, four stereo aux returns, 128 scene memories recallable via MIDI, and 100mm faders.

Mackie was demonstrating a prototype version of the automation package for the 8-Bus console (see review on page 112). The system consists of three components: an external VCA bank, called OTTO 34, that plugs into the channel inserts of the 8-Bus (or any other console equipped with channel inserts), a fader pack called OTTOPilot, which features 32 100mm log taper faders for controlling the VCA bank, and OTTOMix Pro automation software for the Mac or PowerPC. The system can be configured with up to 128 channels, and OTTOMix Pro can also be used to drive OTTO-equipped CR-1604 mixers. Prices for the system components have yet to be determined. Also for the 8-Bus: a 24-channel expander ($2,995), a meter bridge ($695) for the expander, and a sidecar rack unit ($295) that mounts to the 8-Bus stand. The company was also showing a new version of the LM-3204 line mixer ($995); the updated design features two channels of mike preamplifiers. A new expander, the LE-3204 (price to be announced), lets you add 16 stereo line inputs to the system; multiple expanders can be used.

Seems like everybody these days is making affordable mixers — lots of them. Case

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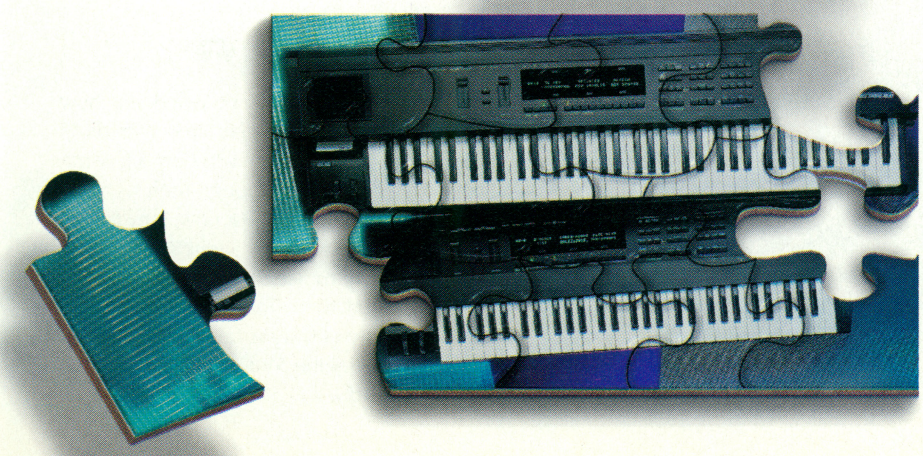

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Yamaha's MT120S multitrack cassette recorder can be synchronized with your MIDI gear.

in point: **Samson Audio** previewed seven new mixers. The PL 2402 ($599.99) rack-mount line mixer offers 12 stereo inputs, four output busses, and four stereo aux returns. Each channel has three-band EQ and six aux sends. The PL 1204 ($599.99) is a 12-input mike/line rack-mount mixer with four output busses and two stereo aux returns. Inputs and outputs are balanced, and each channel features three-band EQ and two aux sends. The PL 1602 ($299.99) offers eight stereo channels with two-band EQ and two aux sends per channel, two stereo aux returns, and balanced inputs and outputs in a two-rack space. The MPL 1502 ($399.99) rack-mount mixer sports five balanced XLR mike/line inputs and five stereo line inputs, phantom power, three-band EQ and two aux sends per channel, two stereo aux returns, and stereo outputs.

For powered mixer users, Samson Audio was offering the S8 rack-mount mixer/amp ($679.99), which features eight XLR mike/line inputs, four-band EQ and two aux sends per channel, internal reverb, a ten-band graphic, and an amp that delivers 300 watts into four ohms. The S6 ($549.99) is similar to the S8, but with two aux returns and a 210-watt amplifier. The SX6 ($429.99) has six XLR inputs with two-band EQ on each channel, internal reverb, a five-band graphic EQ on the master output, and a 150-watt amp.

Soundtracs, whose consoles are distributed by Samson, was premiering the Topaz, a 24-channel in-line recording console ($3,995; $4,995 for 32-channel model). Features include eight subgroups, six aux sends, phantom power, phase reverse, four-band EQ per channel, two-band EQ on each tape return, 100mm faders, mute and solo functions, and 10-segment LED meters. **Tascam** introduced the M-2600 recording mixers ($2,999 for 16-channel model; $3,799 for 24 channels; $4,699 for 32 channels), which offer in-line design, eight subgroups, low-noise mike preamps, solos and mutes, four-band split EQ, and four mono aux sends and one stereo headphone cue send per channel.

The Vision M series eight-bus consoles from **D & R** are designed for use in MIDI and multitrack digital recording studios. The consoles feature the company's new "DMM" — dual multitask module — a true stereo input module that offers two sets of sweep EQ, two sets of aux sends, and two sets of mutes, solos, and faders. The Vision MT series consoles contain mike preamps and four-band EQ; the SR series is designed for sound reinforcement applications. Prices for Vision consoles range from $3,500 to $20,000, depending on configuration.

Doing some live gigs? **Generalmusic** debuted the Powercase 12 powered mixer ($1,195), which comes packaged in its own impact resistant molded plastic casing with metal front-panel protector. The unit, which can also be rack-mounted, features four stereo line inputs, four mike/line inputs, three-band EQ and three aux sends per channel, built-in stereo digital effects processor, and an amp that provides 250 watts per side into 8 ohms. If you need more inputs, there's the Powercase 16 ($1,595), which sports an extra four mike/line inputs.

For the size-is-everything set: **MIDIman** introduced the MicroMixer 18 ($399.95), a single height, half rack-space 18-channel line mixer. Twelve of the channels have gain, pan, and dual send controls; six channels are hard-wired directly to the left and right outputs. Also included are left, right, and mono aux returns, and a stereo headphone jack with level control. And if multimedia's your game, you'll want to check out the **Roland** MX-5 ($179.50), which features four stereo inputs and one stereo aux input with pan, balance, and gain controls on each channel. Inputs are configured with RCA jacks; channels 1 and 2 also have 1/4" jacks, and can accept both mike- and line-level signals.

JLCooper's Cuepoint Universal Autolocator gives you simultaneous control over multiple tape decks and MMC-compatible devices.

After all that, you may be wondering how our fearless dynamic rangers fared. Incredibly, they managed to escape with only a few minor cuts and bruises, though their psyches may be forever scarred. For now, they're resting comfortably at Aunt Sassie's asylum for the criminally musical. But that's liable to change when they find out that the next NAMM show is only a few months away. And then there's the Music Messe, and NAB, and CES, and. . . .

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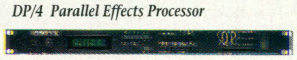

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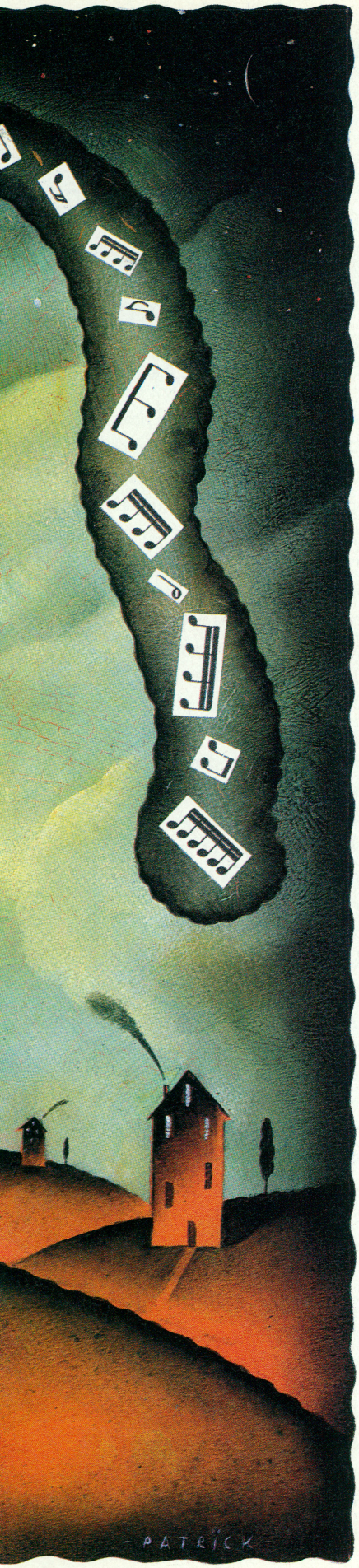
Illustration: Pat Corrigan



Recording Synthesizers

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Here's How To Add REALISM & PUNCH TO YOUR MIXES

Recording an electronic instrument is simple, right? You just take the output, direct-inject it into the mixing console, and set a reasonable level. And yes, that approach works just fine — provided you want to sound just like everyone else who is doing precisely the same thing.

The fact is, synthesizers are musical instruments. You wouldn't mike a drum set by taking the first mike you found and pointing it in the general direction of the drummer, nor would you record an electric guitar by just plugging it into a mixing console. A little extra effort spent on finding the optimum way to record

by Craig Anderton

an electronic instrument can make a tremendous difference in the overall "feel" of any track that incorporates synthesized sound.

Granted, synths and drum machines don't need miking, but there are other considerations: an unnatural sound when mixed with acoustic instruments, possible background noise, lack of expressiveness, timing incon-

TECH TALK with producers

Don Was & Felton Pilate

by Greg Rule

Bringing out the best in an artist is the name of the game for Mr. Record Producer. Sure, most of the good ones get paid the big bucks, but if they are capable of turning lackluster records into a shiny platters of gold, then it's money well spent. *Keyboard* tracked down a pair of top producers recently and picked their brains for tips, tricks, and conceptual guidelines for getting synth sounds to tape.

Don Was. His credits as a producer are extensive . . . and illustrious: Bonnie Raitt, Bob Dylan, the B-52s, Paula Abdul, Iggy Pop, Elton John, the Rolling Stones, Guns N' Roses, and his own band Was (Not Was) to name but a few. Don Was has applied his golden knob-twiddling touch to countless record and remix sessions; he's one of the most in-demand producers on the West Coast.

Felton Pilate. As co-producer of Hammer's *Let's Get Started, Please Hammer Don't Hurt 'Em,* and *Too Legit to Quit,* and as the driving force behind '70s funk pioneers ConFunkShun, Felton Pilate has enough gold records to open a mint. He's also written and produced a series of jingles for the California State Lottery, Bank of America, and Pacific Bell. Oh yeah, did we mention he's also a respected keyboardist, vocalist, and songwriter?

FELTON PILATE: "TO TEST A MIX, I DO THE PARTY EFFECT: I PUT IT ON MY HOME STEREO, WALK OUTSIDE, AND LISTEN FROM THE PORCH."

When you record synths, is it typically a straightforward, direct-to-tape process?

Was: Basically I try to add grit to it — I guess by virtue of the fact that most tracks I cut are live-musician tracks. When you're overdubbing digital synths that have a crisp high end, they can sound like they're in another room from the acoustic instruments. So I try to make them sound shittier, basically. That includes running them through amplifiers with broken speakers, and miking that. Running them through Leslies. Dumping it down a hallway and then miking it from a distance. Running them through various abused equipment. Anything to throw some mud on it.

A lot of modern synths have their own built-in effects processors, some pretty good, some not so good. Do you prefer dry signals from the keyboard rig so you can use more elaborate outboard effects?

Was: In general, if I have a complaint with the mass-market synthesizers that are out there now, it's that people tend to use the same sounds. They have very distinctive trademark sounds that can be overbearing. So if someone uses those effects to create a new texture, I would never say shut it off. But if you're just using the preset that ten million other people are using, then I'm maybe more sensitive to that. For example, the keyboard player I work the most with is Benmont Tench, from Tom Petty's band, who does some very impressionistic things with a Hammond C-3. He's got sort of an accessory send and receive, so he can send out to these various effects pedals. When we're going for some ether, something moody, I encourage him to use those pedals. But he's very musical with it. I think that's it. Anything I tell you about this can be contradicted. It's totally subjective, and it's really how the individual handles it. Are you going to do something that's inventive and appropriate and that hopefully matches the originality of the rest of the record, or are you going to be a cliché? There's no real answer to that. All this stuff is fantastic. Anything is right if it works.

Pilate: When it comes to pads and things like that, I'll usually just stick with the on-board effects. Sometimes it's nice to have the sounds and effects printed on tape prior to the mixing session. If I know up front that I want a string part to be stereo flanged, for example, then if I record it with the effect, the concept won't get overlooked or changed in the final mix. I don't mind committing to the effects early — that's one less thing to worry about later.

Your studio is jammed with synths, including Roland's JD-800. When cutting tracks with it, do you ever use the sliders as real-time controllers?

Pilate: Often. That was what attracted me to the JD-800 in the first place. I really missed having instant access to the filters. I used that synth a lot on Hammer's *Too Legit to Quit* album. I'm very dependent on it for real thick bass sounds, and the reason is because

sistencies, (sometimes) monophonic sound generation, and many other issues that must be addressed if you want to get the most out of your silicon-based musical buddies. That's what this article is all about.

But first, a word of warning: Rules were made to be broken. There is no "right" or "wrong" way to record, only ways that satisfy you to a greater or lesser degree. Sometimes doing the exact opposite of what's expected gives the best results (and lands you on the charts). So take the following as suggestions,

of the slider control. I can get inside it just like I could on my Minimoog. That was probably one of the first things I did when I got it: picked out a couple of really good bass patches and then tweaked for weeks.

So after you've created the patch and mapped the sliders to the appropriate destinations, what comes next — what might you do to the signal once it's left the synth and before it ultimately ends up on tape?

Pilate: That depends on the type of project. For example, there was a rap project I was doing, and I was using the [Alesis] ADATs, but we needed it to not sound clean. So on one bass patch, I sequenced it, over-compressed it with an Alesis compressor, recorded it onto a standard-bias cassette, and then sampled it back into my [Roland] S-770. That eventually ended up as a track on the ADAT. It sounds backwards — people buy the ADAT for its nice clear sound — but not all types of music require that, especially the hip-hop stuff.

So you prefer to sequence your synth parts before committing them to tape.

Pilate: Bass lines, yes. For the most part I like to sequence them. I usually want them to be exact. But for other parts, if I want a more spontaneous, looser feel, then I'll cut it live to the ADATs on the fly.

Don, do your recording techniques vary depending on the tape format — analog or digital?

Was: It doesn't matter. I just think you have to do what's right for the song. I believe songs can come with their own DNA code that tells you where to go. You've got to take into account who your artist is.

If you are working with a keyboardist who has a large rig, do you prefer to have separate line outs from each component, or do you like a pre-mixed stereo feed?

Was: I like to do whatever the keyboard player is comfortable with. I believe you respect that, and you presumably cast people who have a sense of where you're going. You don't hire someone who's not going to be compatible with the moment. If you're putting someone in there, let 'em stretch.

What's the hardest thing about recording a synthesizer?

Pilate: Making decisions about how the low end is going to respond once the song has left the mastering room. How much low end should I use? That can be a tough decision.

Let's say the record is done, you're hearing it for the first time on your neighbor's car stereo, and only then do you realize the bass is so heavy that his speakers are about to blow. How do you avoid a post-mix low-end disaster?

Pilate: I do an incredible amount of listening ahead of time. First of all, listen to it on small speakers and ask yourself, "Under the worst possible conditions, does it still sound reasonably close to what I wanted it to sound like?" Then, to further test a mix, I do something I call the party effect: I put it on my home stereo, walk outside, and listen to it from the front porch. Why? Let's say you're going to a party, and as you're walking up the driveway to the front door, you can hear the music. Instantly, before setting foot inside, you know what song is playing. That's a good mix. Or, if a car is driving up the street and the stereo is turned up loud, I want people to know exactly what the song is. I used to own one of the Nady wireless units that would send a guitar signal to an unused FM frequency. So I would take the console, combine everything down to mono, plug in the wireless, and dial in the song on my car radio.

DON WAS: "I DON'T CARE ABOUT NOISE. ALL I CARE ABOUT IS THAT, AS A WHOLE, THE RECORD'S GOT A GOOD REASON TO BE THERE."

So many keyboardists are jumping aboard the vintage bandwagon these days. But those old synths can be noisy. Is that ever a concern?

Was: I don't care about noise. All I care about is that, as a whole, the record's got a good reason to be there — by whatever means is necessary. In my opinion, the best records ever made were made under really primitive conditions, and they sound real noisy. It doesn't matter at all. I love the Chess Records things, the Willie Dixon era, Muddy Waters, and Howlin' Wolf records. They're as evocative and moody as anything you'll ever hear. The depth of feeling on those records overrides everything, and that's something that hasn't changed in 50 years.

Joe Blow has a crappy little MIDI home studio and he wants to know how to get better results with what he has. What advice would you give?

Was: I'll tell you this, the biggest hit single I ever had was "Walk the Dinosaur" [from the Was (Not Was) release *What's Up Dog?* on Chrysalis]. That was recorded on a Fostex E16 [half-inch 16-track recorder] in my den, and a plastic $2,000 console. I'm not saying that that's a particularly innovative record, but it connected on some level that had nothing to do with technology. And it's not a bad-sounding record, that's for sure. Anything is possible, but write a good song man [*laughs*]. A good song done on a Portastudio in Nebraska works. A good song is a good song.

not rules, that may be just what the doctor ordered when you want to spice up an otherwise ordinary synth sound.

THE SYNTHESIZER'S SECRET IDENTITY

The paramount aspect of recording a synth is to define the desired results as completely as possible. Using synths to reinforce guitars on a heavy metal track is a completely different musical task from creating an all-synthesized 30-second radio spot. Sometimes you want synths to sound warm and organic, but if you're doing techno, you'll probably want a robotic, machine-like vibe. (With trance music, you might want to combine both possibilities.)

Analyze your synth's "sonic signature": is it bright, dark, gritty, clean, warm, metallic, or what? Some people attach value judgments to these different characteristics, but veteran synthesists understand that different synthesizers (and even different patches) have different general sound qualities, and choose the right sound for the right application. An instrument that's perfect for making a three-layer stereo-flanged pad burst into full bloom may be exactly wrong for a rude lead line.

Maybe one of the reasons for a resurgence in analog synths is the rise of digital recording. Analog synths tend to use lowpass filters that lack the "edgy" sound of digital sound generators. Record the darker analog sounds on analog tape, and sometimes the results are muddy; record on digital, though, and the analog sound becomes very sweet. Digital also captures all the little hisses, grunts, and burps that make analog synths the delightful creatures they are.

Another thought: Look at guitars, voices, or piano on a spectrum analyzer, and you'll note there is little natural high end. The two synths I use the most for rock music projects have fairly low sampling rates, which leads to a somewhat duller sound. This more closely matches the characteristics of "real" acoustic and electric instruments, so the synths seem to blend in better with the other tracks. Sure, you could use equalization to tame an overly bright synth, but there's a subtle difference between an instrument's inherent characteristics and the modifications you can make to those characteristics. In a similar vein, 8- and 12-bit synths may have just enough "grunge" to help them fit in better with rock material.

For background music for commercial videos, I often pull out the "bright guys" — synths and newer machines with 44.1 and 48kHz sampling rates. These give you more of an edge at lower volumes, and their "clean" qualities leave space for narration, effects, and other important sonic elements.

The point of all this is start with as close an approximation as possible to the desired result. But even if you don't have an arsenal of synths, keep your final goal in mind. There's lots you can do to influence the overall timbre of a synthesizer and achieve that goal.

SPACE: THE FINAL FRONT EAR

We have two ears, and listen through air. The sound we hear is influenced by the weather, the distance to the sound source, whether we've listened to too much loud music on headphones, the shape of our ears, and many other factors. Synths generate electrical signals that need never reach air until we hear the final mix, but there are compelling reasons to avoid going direct all the time.

Compared to acoustic instruments, synth sounds are relatively static (especially since the rise of sample-playback machines). Yet our ears are accustomed to hearing evolving, complex acoustical waveforms that are very much unlike synth waveforms. The only thing that allows sample playback synths to give even a remotely satisfying musical experience is that the ear cares mostly about a sound's attack. The ear identifies the instrument based on the attack (sort of like a computer servicing an interrupt), then moves on to listening to another instrument.

Sample-based gear is very good at producing convincing attacks, but the decay characteristics are generally poor; the ear notices this static quality. Creating a simple acoustic environment for the synth is one way to create a more interesting sound. This can also help synths blend in with tracks that include lots of miked instruments, because the latter usually include some degree of room ambience (even with fairly "dead" rooms). How can you do that? Read on. . . .

THE VIRTUAL ARCHITECT

The most straightforward technique is to synthesize an acoustic environment using a signal processor. Try this: During recording, patch the synthesizer through a reverb unit set to the sound of a small, dark room with very few (if any) first reflection components. This should be just enough to give the synthesized sound a bit of acoustic depth. When the synth and other instruments are sent together through the main hall reverb during mixdown, they'll mesh together a lot better. Another trick is to add two or three very short delays (20-50 ms, no feedback) mixed fairly far down. A stereo delay unit works just fine. Delays this short can add "comb filtering" effects that mess up the frequency response in the same way that a real room does.

You may want to create a different type of acoustic environment than a room, such as a guitar amp for electric guitar patches. Amps generally add distortion, equalization, limiting, and speaker simulation. Feeding the synth through something like a Scholz Rockman or guitar multi-effects box can create a sound with much more character.

A second way to create an acoustic environment is to use the Real Thing. A vintage tube guitar amp is a truly amazing signal processor, even when it's not adding distortion; plug your synth into it and stick a mike in its face. The sound is very, very different from going direct.

Another way to add the feel of an acoustic space to a synth is to mix in a bit of miked sound of you playing the keys (sometimes a contact mike works best). This should be mixed very subtly in the background — just noticeable enough to give a low-level aural "cue." You may be surprised at how much this adds a natural sound quality to synthesized keyboards.

For those who want the coolest sound with the least amount of setup time, run your synth through a tube preamp. (I'd be crazy not to plug the Stack-in-a-Box tube preamp kit, co-designed by me and John Simonton; it was featured in the Feb. '93 *Guitar Player* and works extremely well for this application.) FM synths in particular respond well

ABOUT THE AUTHOR

Craig Anderton cut his first record at 18 as part of the '60s group Mandrake. After that he cut two more albums with Mandrake, did session work in New York, produced three albums by classical guitarist Linda Cohen, did some mixing and arranging for new age stars David Arkenstone and Spencer Brewer, and released a solo CD in 1989 (*Forward Motion*, dist. by MCA). He is currently working on industrial-strength dance music with deconstructed guitar.

to tubes, which take the "edge" off the sound and add a subtle amount of compression.

"BUILDING BLOCK" SYNTHESIS

When playing live, you're often constrained by the amount of equipment you can take with you. In the studio, you can construct sounds using not just your own gear, but any synths the studio happens to have available. As noted earlier, different forms of synthesis have different strengths, so layer several synths via MIDI and use each to provide a particular part of the overall composite timbre.

For example, every time you play a sample it will exhibit the same attack characteristics. Sure, you can do tricks like velocity-switching or sample start point changes, but a better approach is to layer an FM synth programmed to produce a more complex transient. FM synths don't have the same "photographic" level of realism as samplers, but can produce wide timbral variations — particularly on a sound's attack — that are keyed to velocity. I've used this to good advantage on harp and plucked string sounds, where the FM synth provides the pluck, and the sampler the body of the sound. Grafting the two elements together produces a far more satisfying effect than either one by itself.

There's a caution, though. If the two sounds sustain for any length of time, the timbral difference may become too noticeable. Therefore, you might want to set a fairly short decay on the "attack" sound and a bit of an attack rise on the "sustain" sound so that it doesn't overwhelm the attack component.

Doubling a part via overdubbing is another variation on "building block" synthesis, but opens up another possibility. Prior to recording the second part, change the tape

Squeeze Me, Baby: The Art of Dynamic Control

Tape's limited dynamic range can fight with certain types of synth patches. Strong signal peaks are bad enough with analog recording, but can be disastrous with digital recording — go much over zero VU, and you'll hear a particularly ugly and repulsive type of distortion.

Your first line of defense is proper synth programming. For example:

• Detuned oscillators, though they sound nice and fat, create strong peaks when the chorused waveform peaks occur at the same time. To solve this, drop one oscillator's level about 30%-50% below the other. The sound will remain animated, yet the peaks won't be as drastic and will be less likely to cause distortion.

• High-resonance filter settings are troublesome; hitting a note at the filter's resonant frequency creates a radical peak. To print the maximum possible signal level on tape, use as little resonance as is necessary. Instead of recording highly resonant sounds, consider using a parametric equalizer during mixdown to add resonance.

The compressor/limiter, a common signal processor dedicated to smoothing out dynamic range, is a more universal solution. In a nutshell, this type of device automatically turns down the output for strong signals and turns it up for soft signals, to maintain a more uniform dynamic range. Figure 1 shows how a typical compressor/limiter affects the signal.

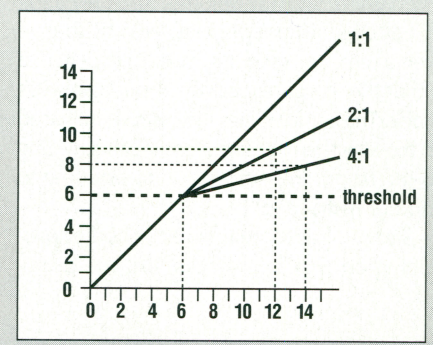

Fig. 1. This is what happens when a compressor is used on a signal. With no compression, the output is equal to the input (the 1:1 line). Applying a compression ratio of 2:1 means that, once the device exceeds a user-definable threshold, for every 2dB increase in level at the input there will be only a 1dB increase at the output (the dotted lines for this curve show how a 6dB input change results in a 3dB output change). Similarly, the 4:1 compression ratio shows how 8dB of input change yields only 2dB of output change.

So much for theory; now for some applications:

• When using a compressor/limiter, set the controls for fast attack and moderate decay. Since the limiter's main function is to trap short peaks and transients, set the threshold fairly high, and use a very high compression ratio. This will leave most of the signal relatively unaffected, but peaks won't exceed a safe, non-distorting level.

• Electric bass parts are often compressed to maintain a more consistent low-end level, and this same trick works with synth bass parts.

• Sounds with chorusing or other processing that causes significant level variations can benefit from outboard compression. However, when an equalized signal is compressed, the compression will partially undo the effects of the EQ. Add EQ post-compressor rather than pre-compressor.

• Drum machine sounds work well with compression, but processing an entire kit can cause undesirable side effects such as pumping and breathing. To avoid this, split the drums into two submixes, with the kick, snare, and toms feeding a compressor and the assorted percussion and cymbals feeding a non-processed bus. The main drum sounds will have more punch, but the lighter, more accent-oriented sounds will retain their original dynamic range and not be subject to the side effects of compression. ■

deck's speed by 1% or 2% (and retune the synth to compensate). The pitch shift will produce slight timbral and envelope rate changes that add more color to the overall sound.

And now, a tip along the same lines for the terminally lazy: For an instantly bigger synthesized acoustic sound than what you're getting now, layer another synth with the first and call up a like-named patch (for example, layer two different vibes or cello patches). It's amazing how many times this will make a really cool sound (although you may also discover how sloppy the manufacturers were about properly tuning the samples).

This technique also works fabulously with drum machines — just assign two or more different drum sounds to the same note. My favorite combination: a TR-808-type bass thud blended with a tight, dance-music thwack.

VIRTUAL TRACK OR TAPE?

One matter of controversy is whether it's best to run synth tracks as virtual tracks into the final mix, or record them on tape and mix from tape (or hard disk recording, if that's your thing). As expected, there's no "right" answer. Here are some of the factors you need to weigh:

• Virtual tracks are less reliable and harder to re-create at a later date if needed. Once something is printed on tape, it's there to stay.

• Virtual tracks offer potentially greater fidelity than taped tracks, particularly with analog gear, because the first-generation sound is going direct to the final mix.

• If several other instruments are recorded on tape, virtual tracks may sound "different" by comparison. This may or may not be a good thing, depending on the musical role of the virtual tracks.

• The same effect unit can be used multiple times if you're overdubbing on tape. Virtual tracks each need their own effects. (This is one of the applications where on-board effects processors come in really handy.)

A combination of virtual and taped tracks is often the best solution. For example, with sonically dense compositions in an 8-track environment, I like to premix several sequenced tracks to tape. If it works, great; if not, I can always redo the premix. On the other hand, I almost always record drums as virtual tracks; you seem to lose just a little presence by going through an extra set of A/D and D/A converters.

MORE SIGNAL, LESS NOISE

Even today's digital wonder boxes generate some noise, and it's important to

Synth Programming Tips for Better Recording

• Patches that sound killer by themselves may take up way too much space in the mix, or may have too strong a character. Conversely, a patch that you'd swear was a useless wimpy mess may fill up exactly the right frequency range, or add a touch of attitude without hammering itself into the listener's brain. When searching for the right patch, make a list of possibles. Then cue up the song and step through your patch list, playing a part while the song loops through eight bars or so. You may be surprised what you'll come up with that you never would have thought of if you'd tried to plan it.

• For a real wide stereo field without resorting to ambience processing, try using a synth's "combi" mode (also called performance, multi, etc.) to combine several versions of the same program. Restrict the note range of each combi, then pan each range to a different place in the stereo field, as shown in Figure 2.

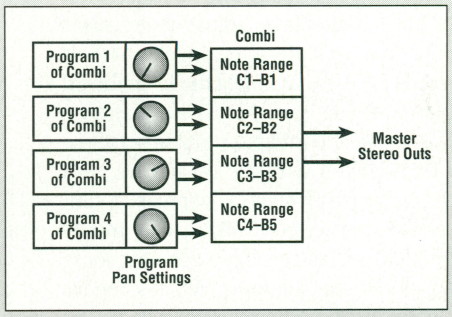

Fig. 2. To get a bigger sound out of a synth, try assigning the same patch to several of the slots in a multi, and pan the outputs to different parts of the stereo field. The lowest note range is panned full left, the highest full right, and other ranges fall in between. Note that this doesn't chew up polyphony, because the ranges don't overlap.

• LFO panning can produce an overly regular, boring sound with sustained sounds, but panning short, percussive sounds (claves, tambourine hits, cowbell, etc.) can work very well. Because the sound is short, you don't hear it pan *per se*; instead, each time the sound appears, it will be in a slightly different place in the stereo field. If you have a rock-solid kick and snare, having a percussive part dancing around the stereo field can add considerable interest.

• When analog tape was king, many engineers used it (knowingly or unknowingly) to perform soft limiting and generate some distortion on drum sounds by recording well into the red (overload) zone of their VU meters. If you have digital gear, which doesn't respond very gracefully to overload, try recording drum sounds with just a hint of distortion from a suitable signal processor (if you have a Peavey SDR 20/20, check out factory preset #72, which I wrote specifically for electronic drums). Using distortion gives a lot more punch, yet you don't really notice the distortion because it clips only the extremely fast transients at the beginning of the sound.

• To pull a synthesized sound out of a mix, add a little bit of a pitch transient using an oscillator's pitch envelope. One of my favorite examples: Program a fast-attack choir patch using two oscillators. Now apply a pitch envelope to one oscillator so that it falls down to proper pitch over about 50ms, and a second pitch envelope to the second oscillator so that it rises to the proper pitch over about the same time period. Set the depth for a subtle effect. This creates a more interesting transient that draws the ear and makes the choir seem louder. Remove the pitch envelopes, and the voices appear to drop further back in the mix, even without a level change.

keep this to a minimum, especially if you do lots of overdubbing.

• Always set your instrument's master volume control to maximum. In most devices this control affects the digital, not analog, stages; a full setting squeezes the maximum range out of the unit's digital-to-analog converter(s). If distortion occurs, lower the level elsewhere in the synth (change an output level parameter, or lower an amplitude envelope's maximum level).

• Speaking of which, remember that most synths have several level adjustments: mixes for individual oscillators, the envelope levels controlling DCAs, final output mixer, on-board signal processing levels, etc. For maximum dynamic range and minimum distortion, these must be tweaked with the same care with which you set ("gain-stage") the preamp, submaster, and master controls on your mixer.

• Older synthesizers often generate some background hiss at all times. While standard noise gates will help take care of this, downward expansion devices (such as the Rocktron Hush) do a more natural-sounding job. If neither form of noise reduction is available, then try the pre-emphasis/de-emphasis trick: When recording, boost the highs at the synth (by changing to a waveform with more harmonics and/or raising the filter cutoff frequency or envelope amount); on playback, use your mixer's equalizer to roll off a bit of the top end to compensate.

• With samples, you can often use the sampler's on-board filtering to reduce noise. The trick is to modulate the filter with an envelope so that the maximum high-frequency response occurs during the attack. During the sound's sustain or decay, the filter closes down more to reduce noise. This can really help clean up otherwise marginal samples.

ALL EFFECTS ARE SPECIAL TO ME!

We need to address another point of controversy: special effects. Most modern keyboards include effects such as chorusing, flanging, echo, reverb, distortion, equalization, etc. But there's only so much a synth can do, so on-board signal processing is often less sophisticated than dedicated rack-mount units. Unless you're using lots of virtual tracks, you'll generally achieve a higher quality sound if you turn off the synth's internal effects and use outboard effects instead.

However, in some cases the effect is unusual enough that it cannot easily be duplicated by outboard devices (for instance, the rotating speaker effect in Ensoniq keyboards, and many of the cool non-linear effects in the Kurzweil 2000). Generally it's not worth the time to try to duplicate these for what may be little, if any, improvement in the sound.

If you're relying on a single synth with on-board effects for most of your tracks, take note of which effects are used in which patches. If you find that everything is going through the Hall reverb with 3.1 seconds of decay time, consider changing the effects on certain tracks to add a third dimension to the mix. Bass synth often works well with no reverb at all, or only a taste of short room ambience. A clav or electric piano comp may work better with phasing or flanging rather than reverb.

DOES ANYONE HERE HAVE THE TIME?

Some older synths respond sluggishly to MIDI data, so while you may be hitting the

Continued on page 153

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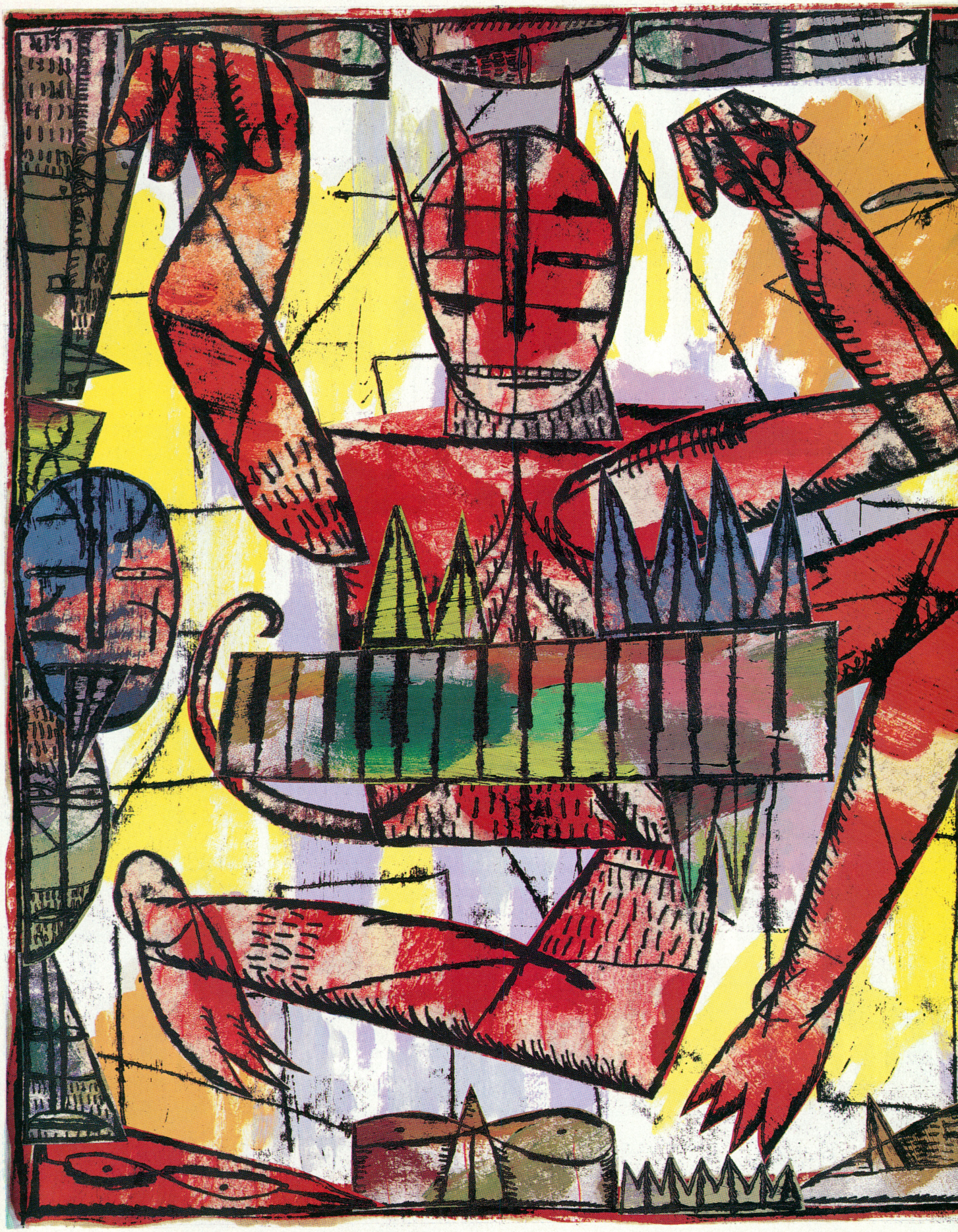

illustration: Richard Downs

demonic DIMINISHED licks

Unleash the Minions of the Diminished Scale upon Unsuspecting Chromatic Harmonies

BY DOC

Back again so soon? What's the problem this time? No, no, no — relax. I'm not questioning your motives. I just need to hear the background: Take a seat, get comfortable, proceed.

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DIMINISHED LICKS

Apr. '94), where you were equipped with a full arsenal of white-key modal licks to impress your friends and frighten your foes. So all was fine, until you got invited to a jazz jam session. The harmonies were complex and chromatic, so your white-key licks were no good. But the old scary licks, highly chromatic and highly scary, just didn't always fit over the chords, and the chord substitutions the other players threw around underneath your solos got you lost. Just when you found one thing that worked, the ground beneath you seemed to change. You felt hurt, abandoned. You considered getting a day job. . . .

Well, as usual, there is a cure for every problem. In this case, we need to prescribe you some licks that derive from the diminished scales, because they are perfect for use with complex chromatic harmony. With these demonic diminished licks on your side, you will be the master of chromatic harmony, particularly the kinds of altered dominant harmony used in many jazz contexts.

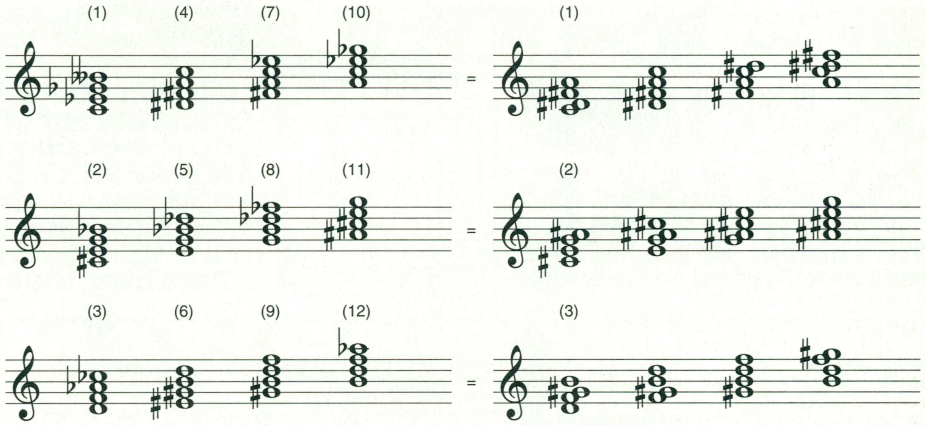
In order to explain how all of this works, though, we need to start this session with a little theory, so you'll know how the diminished scales work. If you understand how they came to be, you can better understand how to bend them to your will. Here we go. Don't worry — it won't hurt. . . .

Since diminished scales are built out of diminished seventh chords, we need to talk about those for a minute. Each diminished seventh chord is constructed out of superimposed minor thirds, and the name of the chord comes from the interval between the root and the top note: a diminished seventh. There are twelve notes in the chromatic scale, and you can build a diminished seventh chord up from each note, but that isn't the full story — it's actually more than the full story.

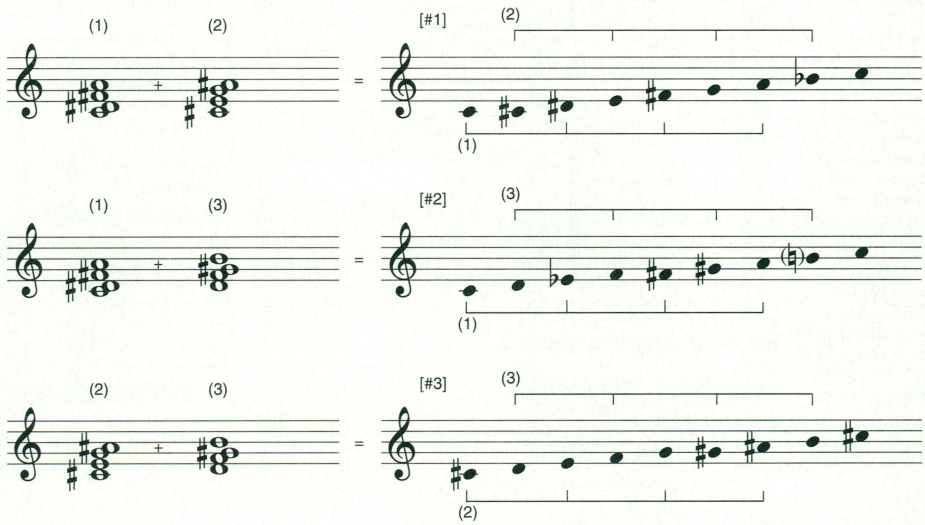
Here's where the fun starts. Since enharmonically equivalent notes (like *D*♯ and *E*♭) are the same note on most keyboard instruments, a number of these diminished seventh chords are actually the same chord. The twelve diminished seventh chords can be reduced to three. (See Example 1.)

Diminished scales are built by combining two diminished seventh chords. Since there are only three essentially different diminished seventh chords, there are only three different combinations and three diminished scales. (See Example 2.) All three exhibit the same basic feature: They alternate whole and half steps. For this reason they are sometimes

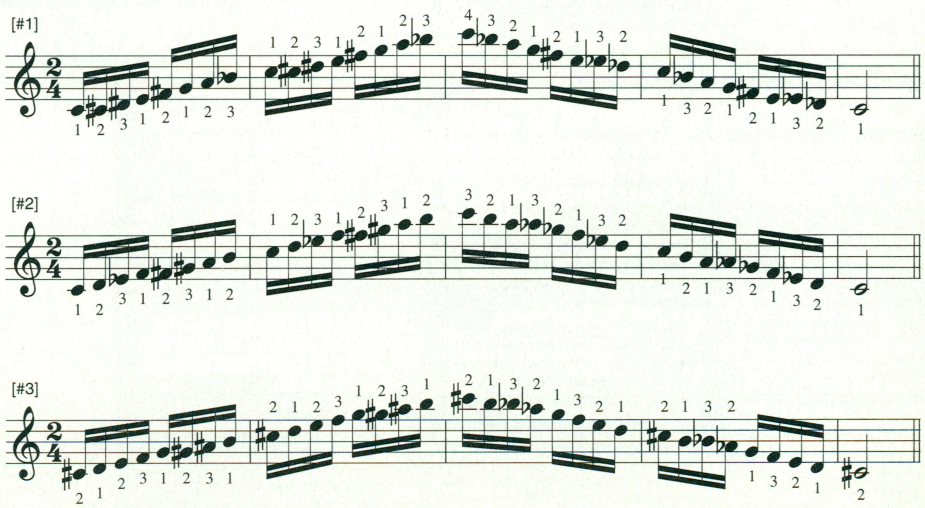
Ex. 1. There are twelve diminished seventh chords, but there are really only three.



Ex. 2. Any two of the three diminished seventh chords give you a diminished scale: Three possible combinations — three basic diminished scales.



Ex. 3. If you get these three scales under your fingers, you will have all of the possible diminished scale forms down.



ABOUT THE AUTHOR

Doc is the altered ego of Keyboard *managing editor Tom Darter. We're not sure which doctor he is, but he has a thriving practice (and works for scale).*

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DIMINISHED LICKS

called alternating scales.

There are many different places where you can start these alternating patterns of whole and half steps; but, no matter where you begin, you will find that the notes you play will belong to one of the three diminished scales we have just created. For that reason, it is very useful to have all three of these note groups in your fingers. Practice all three as scale exercises. (See Example 3.)

Once you get these note patterns down, the simplest way to think about diminished scales is work from the root of the chord, key, or pattern you're playing from. From this root, there are two functional diminished seventh scales: the one that starts with a half-step, and the one that starts with a whole step. In any case, the scales you find this way will be versions of two of the three basic diminished scales you have already learned. (See Example 4.)

Now, what do you do with these scales? Well, as I noted earlier, they are really useful when you are playing in a highly chromatic context (such as you will find in a lot of jazz styles). For most dominant- and altered-dominant-type harmonies, the scale that starts with a half step is the most useful. It contains almost all of the important functional and altered functional notes used in most chromatic harmony. To see how this works, see Example 5, which shows the half-step-first scale for *C*, and shows how it relates to various kinds of dominant functions.

Notice that the scale used is our diminished scale #1. It turns out that this same scale contains exactly the same functional notes for the dominant harmonies on *F*♯. (See Example 6.)

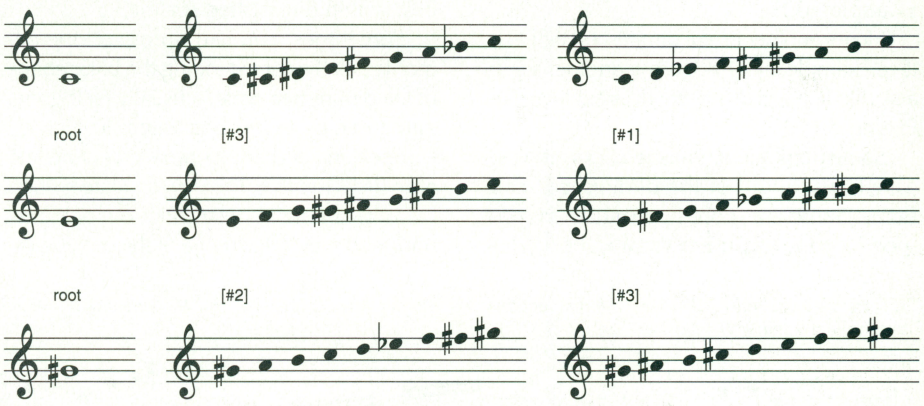
This embodies one of the basic principles of chord substitution: the substitution of the augmented fourth (or diminished fifth). In other words, one of the basic substitutions for a *C7*-type harmony is an *F*♯*7*-type harmony. And the same diminished scales holds the important notes for both of those types of harmony. (See Example 7.)

But enough of this theoretical incantation. The important thing is to understand that these scales can be used over the most chromatic chord progressions — can, in fact, be used to increase the implications of the those chord progressions, and move them into other areas. Let's look at some licks.

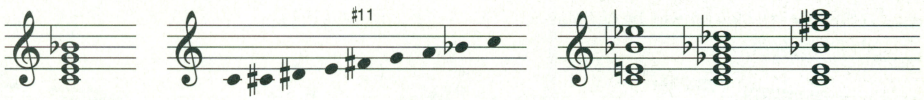
Since all of the diminished scales share the same basic structure, many licks can operate equally well in all of the diminished scales. Some of these are useful enough that it's worthwhile to learn them in all three basic scales. (See Example 8.)

Since it is a primary interval in the diminished seventh chord and the diminished scale, the diminished fifth (*diabolus in musica* — a cheery phrase!) can form the basis of many diminished licks. Try these patterns in different rhythmic combinations, as shown

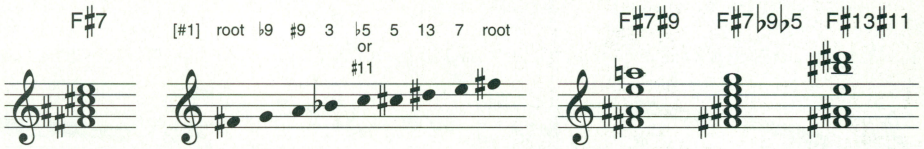
Ex. 4. Starting with any root, there are two possibilities for diminished scales: half-step first and whole step first. In every case, you're still dealing with one of the three basic diminished scales.



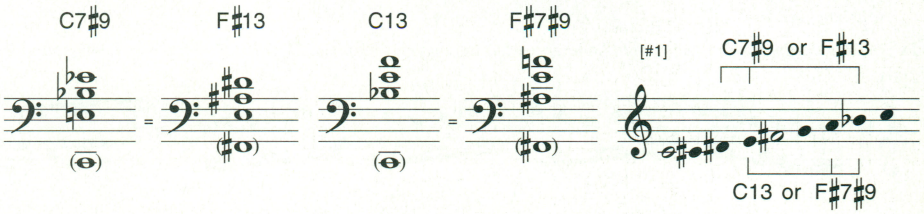
Ex. 5. The diminished scale starting with a half-step can be used above most altered dominant chords. Most C *dominant forms are found in scale #1.*



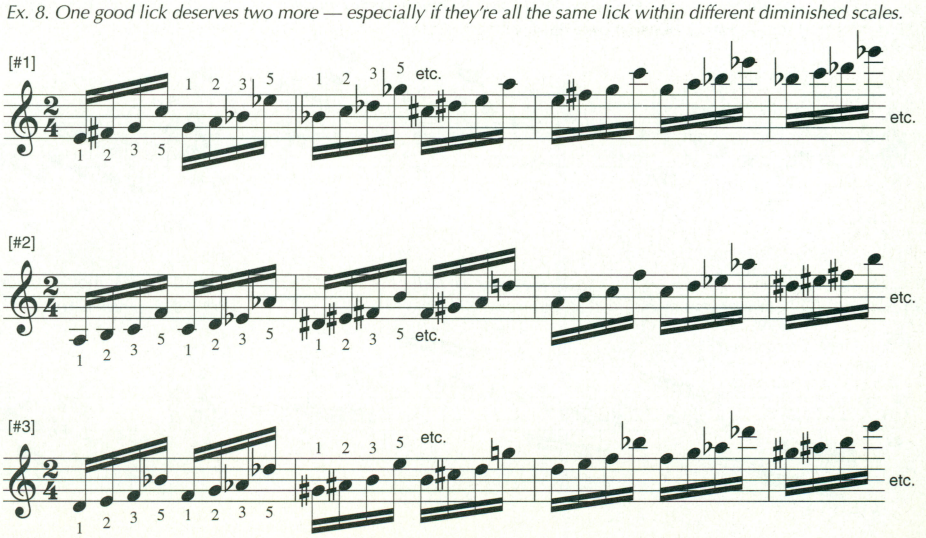
Ex. 6. Scale #1 also gives you all of the same dominant forms for F♯*. Do I smell a substitution on the horizon?*



Ex. 7. C7 forms and F♯*7 forms can substitute for each other; and both can be found within the same diminished scale.*



Ex. 8. One good lick deserves two more — especially if they're all the same lick within different diminished scales.



DIMINISHED LICKS

in Example 9. Also, a pattern like this is useful enough to learn in more than one scale. (See Example 10.)

Here's another useful diminished fifth lick. (See Example 11.) And, using another scale, a similar lick with a slightly different feel. (See Example 12.)

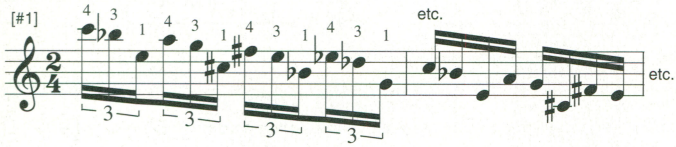
Some demonic diminished licks aren't so easy to use in all of the diminished scale forms. Some are more appropriate for one specific scale, because of the way the lick lies on the keyboard and because of the shape of the right hand. For instance, the lick in Example 13 works best right where it is — with the particular configuration of white and black keys found with diminished scale #1. On the other hand, the pattern in Example 14 works best within diminished scale #3.

Sometimes, you can rip out a long demonic lick by just extending the basic shape of the diminished scale. It usually feels good, and it can be scary. (See Example 15.)

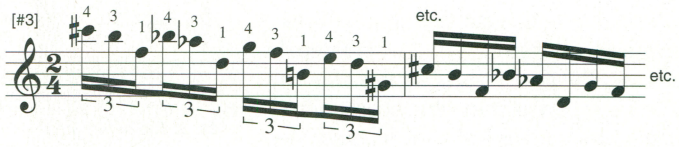
Speaking of scary, it's time to venture into scary licks territory. It's easy to create a number of two-fisted monstrosities out of the diminished scales. Each one of the diminished scales offers its own set of opportunities. Within scale #1, a standard white-key/black-key two-hand alternation fits right under the fingers. (See Example 16.) With scale #2, a repetitive pattern fits both hands like a glove. (See Example 17.) When it comes to scale #3, here's one screamer that's guaranteed to get you up the keyboard in a hurry. (See Example 18.) And, in closing, another horrendous lick from the bowels of scale #1. (See Example 19.)

That should be enough for now. Cook all of this in the caudron of your skull and see what happens. See you next time. Don't trip on any minions on your way out. ■

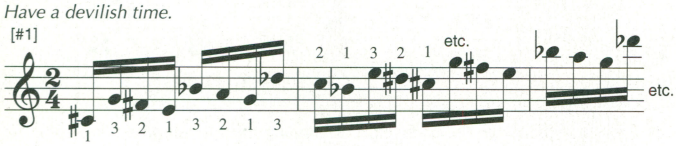
Ex. 9. Here's a squirrelly lick; try in with different rhythmic approaches (compare bar 1 to bar 2).



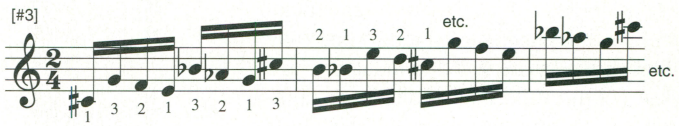
Ex. 10. Same lick as the one in Example 9, built from a different diminished scale.



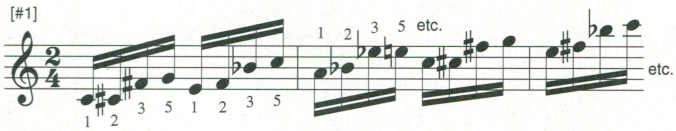
Ex. 11. Another lick built around the diabolus in musica *— the diminished fifth. Have a devilish time.*



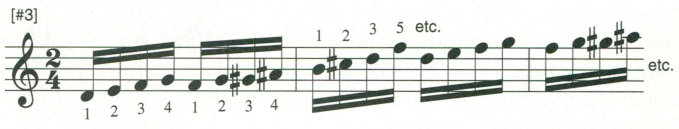
Ex. 12. A similar lick with a different cast, built out of a different diminished scale.



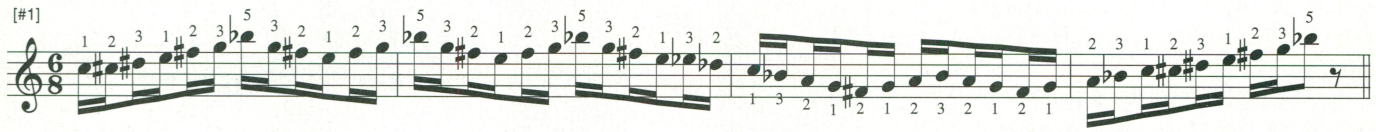
Ex. 13. Here's a twisted lick that only works this well using scale #1. Play it fast.



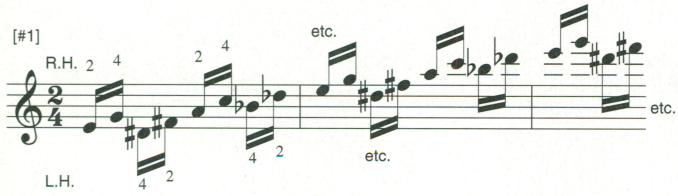
Ex. 14. This lick sits best using scale #3. Play it very fast.



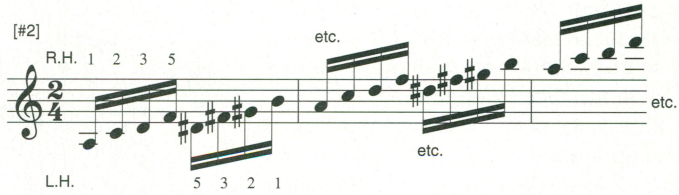
Ex. 15. Rev up the motor of your right hand and let loose with this hummer. The old C7 chord may never sound the same again.



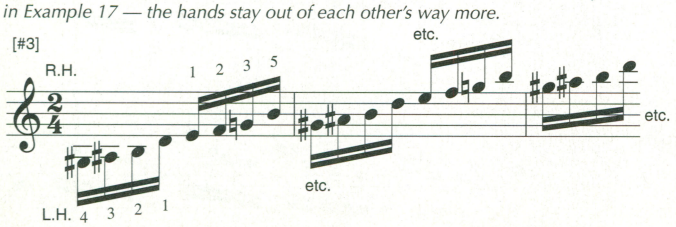
Ex. 16. Want something really scary? Try our two-fisted technique as applied to the diminished scales. Here's one that uses scale #1.



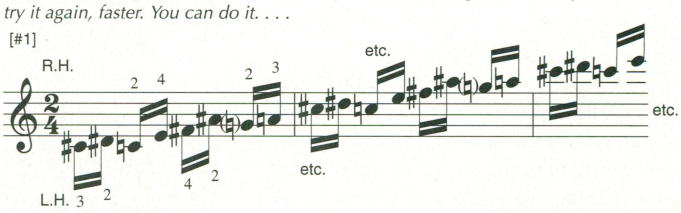
Ex. 17. Here's a two-fisted pattern that tears up the keyboard using scale #2.

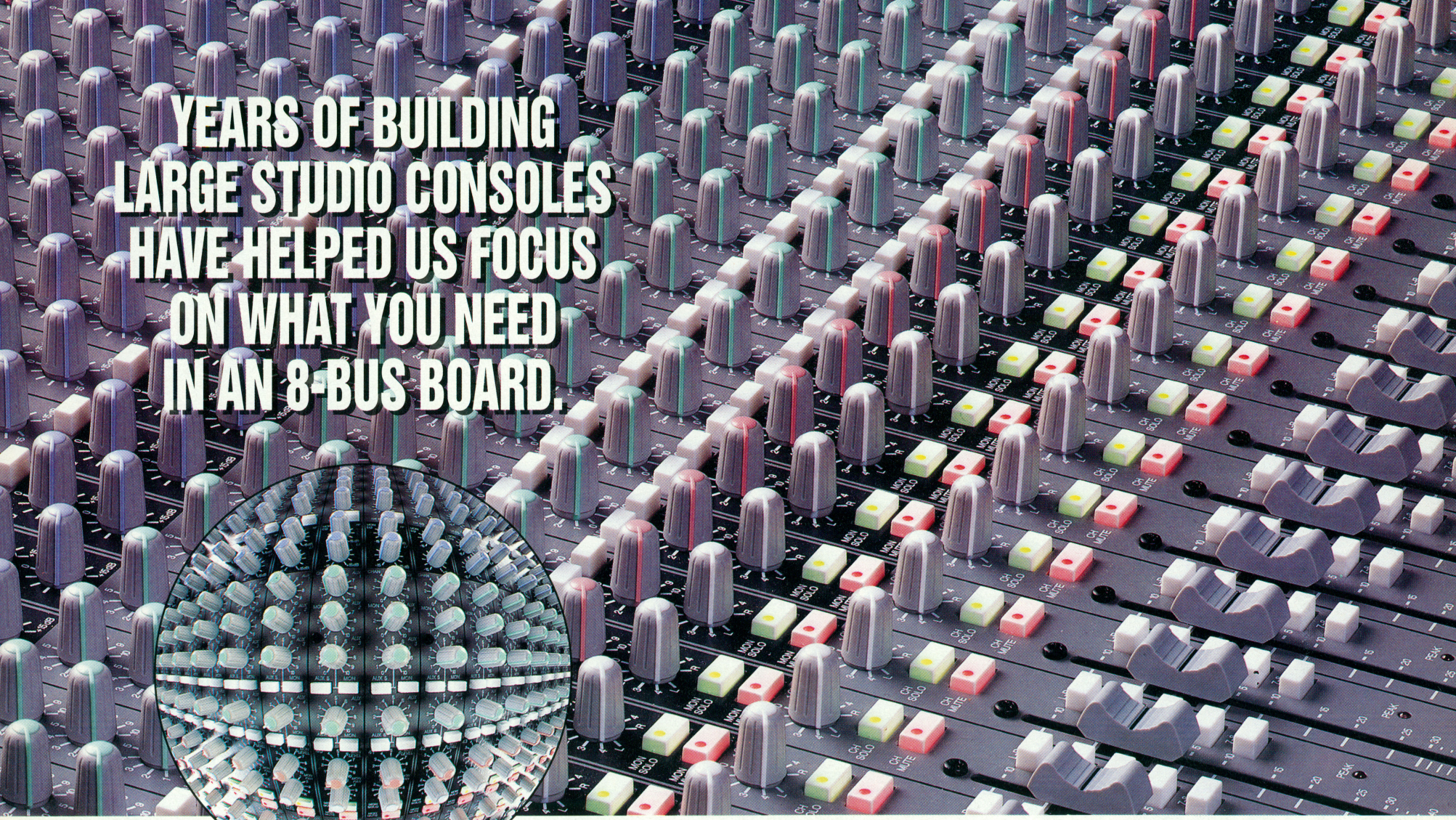


Ex. 18. This little devil, using scale #3, can be played even faster than the pattern in Example 17 — the hands stay out of each other's way more.



Ex. 19. Here's another black-key/white-key alternator using scale #1. Try it. Now try it again, faster. You can do it. . . .





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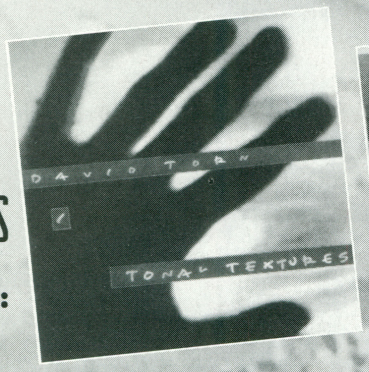

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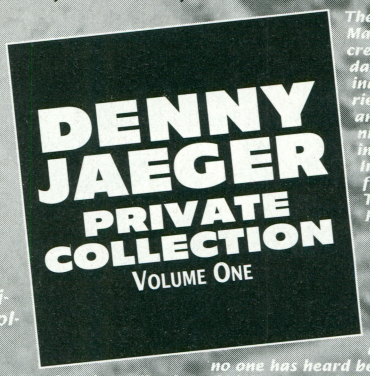

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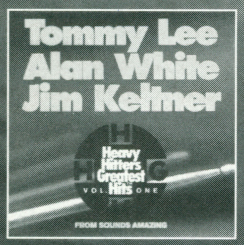

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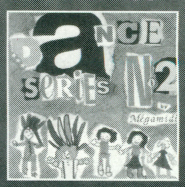

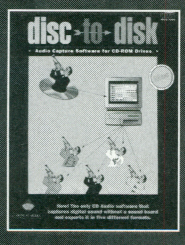

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TREVOR RABIN

SPEAKS OUT ON THE MAKING OF TALK

You've seen him onstage with a six-stringed wooden object dangling from his neck. You've heard his voice, both lead and backup, on a variety of Yes tracks. And you've read his songwriting and production bylines on many an album liner-note. But there's another side of Trevor Rabin that has gone virtually unrecognized over the years: He's a classically trained pianist. Truth be told, Rabin contributed a fair number of synth stylings to *90125* and *Big*

BY GREG RULE

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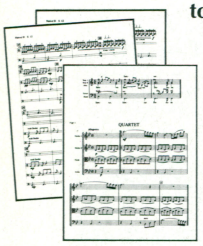

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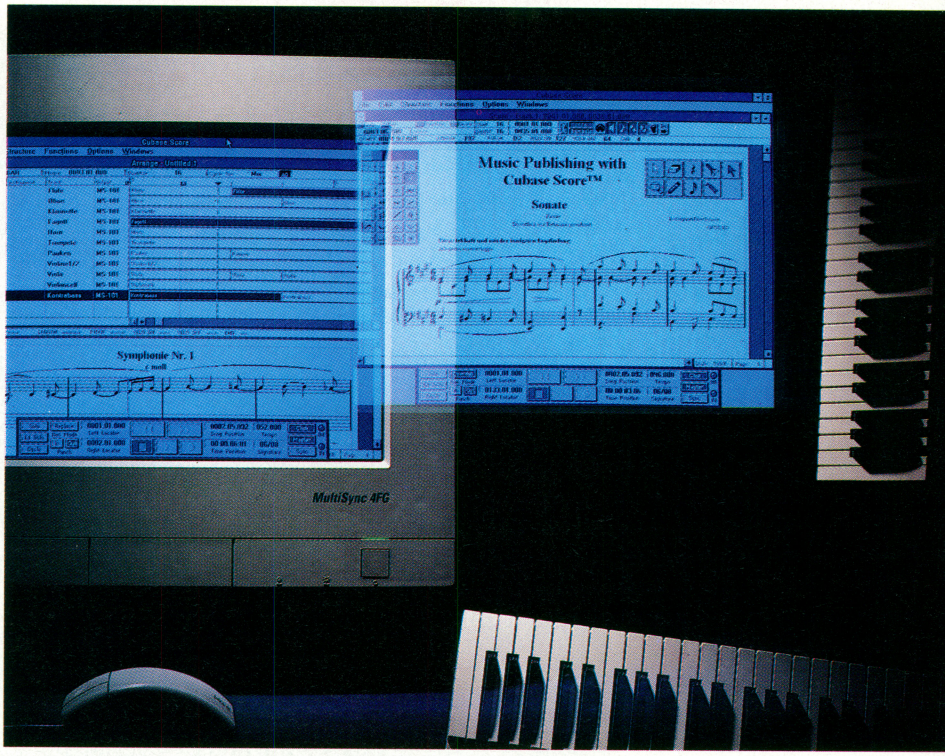

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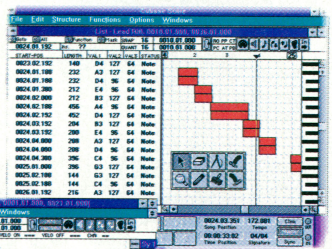

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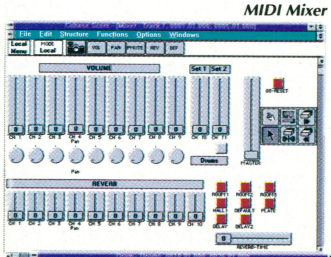

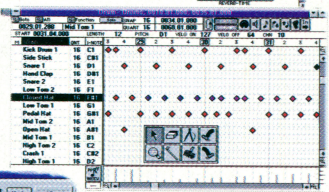

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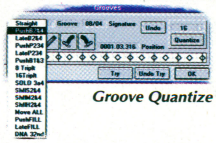

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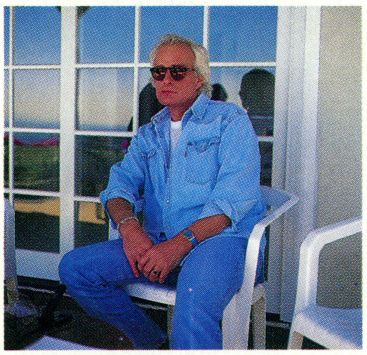

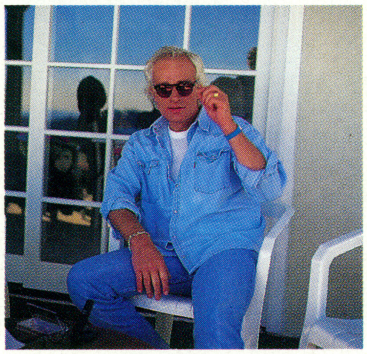

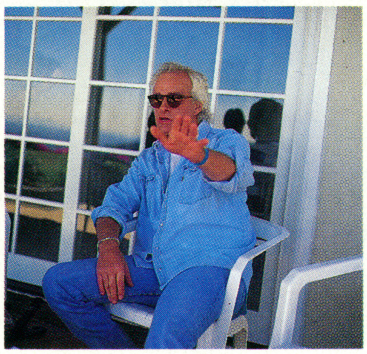

Since reuniting with Yes for *90125*, Tony Kaye has captained one monster MIDI rig after another. Today, though, he's trimmed the technological fat and returned to playing his true love: the Hammond B-3. "It's been a few years," he says with a smile, "but I wanted to get that Hammond back in there. It's my instrument, you know. Actually, I'd been trying to find one for the past three years, and about halfway into the album I saw one for sale in the *Recycler* [an L.A. newspaper]. So I phoned up." The rig — two custom 1,000-watt Leslies and a modified 1964 Hammond B-3 — once belonged to keyboardist Gregg Giuffria.

On *Talk*, Kaye's role was kept exclusively in the organ realm. Did he miss the synth work? "No, not at all," he says matter-of-factly. "Trevor and I tend to work a lot together anyway. He and Jon wrote the album, and because of the way it was done [using Digital Performer], because Trevor's so fast at what he does, it was just a natural thing."

When Yes hits the road this spring, you can bet Kaye will be stationed behind his new (er, old) love. But for the tour, he'll also reprise his role as the band's primary synthesist. "All the string parts and all the sampled stuff we did will be played on my rig," he reports. "It'll be the same setup that I used on the last tour plus the Hammond." For a detailed account of that rig, see page 89 of our August 1991 issue. —*GR*

Generator, and, with the exception of a few choice Hammond tracks supplied by Tony Kaye, he performed *all* of the keyboard parts on the band's latest, *Talk*.

"Marketing-wise, I'm a guitar player, my manager would say," Rabin tells us, "but I don't give a fuck what I am. I love playing keyboards. I've played piano since I was six. Guitar was something I picked up on my own along the way. You know, I just go in there and do the stuff. For the most part I play guitar live, but for the first time on Yes tours I'll be playing keyboards as well."

Not only did Rabin don the hat of session synthesist for *Talk*, he dove into the deepest recesses of hard disk recording hell as the album's high-tech overseer and producer. Four Macintoshes, all running Mark of the Unicorn Digital Performer, were synced together and connected to over ten gigabytes worth of hard disk drives. Not counting the MIDI tracks, every sound on *Talk* was recorded live and/or transferred to those disks, edited, and ultimately mixed by, you guessed it, Trevor Rabin. It was a mammoth 18-month undertaking that pushed Rabin's skills (and sanity) to the limits. "I had a box of Valium next to me at all times," he laughs, "but I'm extremely happy with the results."

Rabin has plenty to say about the past and present of Yes, and, most specifically, about his hard disk adventures during the making of *Talk*.

What series of events brought the 90125 *lineup back together for this album?*

How it started was, there was the *Union* album. I had just finished my solo album, and I was working very hard with Roger Hodgson, the guy from Supertramp. We were having a great time together, achieving a lot creatively, but not really doing anything with it vis-à-vis business. It got to a point where I thought, "You know, I need to make a living." [*Laughs.*] The other thing was I hadn't been on the road for a long time. I'd done my solo album, and my solo tour was very brief. And what happened was, [Yes lead vocalist] Jon [Anderson] called me during that ABWH album, the second one [1989/90], and he said the album was going really well and stuff, but they were looking for one more song. What I read into that was they needed a single. Basically I got three songs that I thought might be appropriate that I wasn't going to use, and sent them to the record company. What I said in the letter was, "Choose one of these songs, if you so desire; otherwise, please send the tape back." To cut a long story short, they chose all of the songs, and that led to them saying, "Why don't we put this whole comprehensive reunion thing together?" Basically the suits got involved, thinking, "Boy, we could make a lot of money here." And so, even though they thought they were manipulating the band, it was something that was useful and convenient to everyone, 'cause we wanted to go on the road, and it was a quick way . . . there were demos that I put on that album. Jon came in and sang on top of these demos, and we just stuck them on the album. So half of it was an ABWH album, and the other half was a Yes album. Ultimately the tour happened, and it kind of worked, but to me, it was extremely contrived. Everything was done for the wrong reason, and I decided I was never going to do that again.

Was that the general consensus at the end of the Union *tour?*

Well, everyone was talking about going in and doing an album. In fact I had a long meeting with a guy from Arista who talked about, "When we do the next album, all eight guys will go in and . . ." And I said, "Look, I'm not doing an album, or a tour, or anything after this. This was a one-off thing and it's not real. It's not a genuine thing. It's a retrospective on the band." The more I did it, the more tainted and dirty I felt about having done it in the first place. Consequently, when it came to an end, for me it was almost like, "Okay, well that's it for Yes, for me. That's the last chapter in something that started off from my

point of view with a nice bang and has now kind of slid into insignificance."

What made you change your mind?

Phil Carson from Victory Music called me and said, "Look, I want to do a Yes album, and I want you to produce it. I want Jon to sing on it, basically I want the *90125* lineup, and because of your relationship with Rick [Wakeman] it would be nice if he was involved." However, there were certain things with Rick's manager that got in the way. So we decided . . . I had already started the process of writing stuff; I'd written a lot of what is now on the album. I thought, "Tony Kaye is a great Hammond player, he's going to play the Hammond stuff on the album, and I've done the rest of the keyboards, so what else is there to do?" So given the situation that was going on [with Rick's management], I felt there wasn't a real need for him to be there, and ultimately it turned out that creatively we felt it was not something we needed to do. One of my conditions was that it was the *90125* band. Otherwise, from my point of view, it was like, "Hey, the band can fire me, it's not that important. But if I'm going to be involved, this is how I want to be involved. Otherwise I'm going to go do something else."

As it turns out, the 90125 *lineup is now all L.A.-based, right?*

Yeah. I'm much more excited that it's the *90125* lineup. As far as the *Reunion* lineup, that's never going to happen again — unless they do it without me.

According to the band's bio, Talk *is the first album that you and Jon Anderson truly collaborated on songwriting-wise. That's somewhat surprising since the two of you have recorded together for more than a decade.*

Right. Without getting too long-winded, *90125* was something that wasn't going to be Yes. I was looking for a record deal. I had written most of the *90125* album and I wanted to record. I got some responses from various record companies, Arista included, that stated the stuff was far too left field and wouldn't make it in the market today. Consequently it became a number one album. But how I went about it was I sent tapes out and one bit of interest came from Atlantic Records. It came in the way of, "We've got a couple of people who are trying to get bands together. Chris Squire and Alan White, and Jack Bruce and Keith Emerson." So there were two options. From a selfish point of view, I thought, "What I really need is a great rhythm section." So I got together with Chris and Alan. To cut a long story short, we then decided to contact Tony Kaye. I'd played all the keyboards on my demos, but who was going to play the stuff live? He came over, we got on well, and that consequently turned into the *90125* lineup, less Jon. The band was called Cinema, and there was never any intention to call it Yes. At the last minute, Chris happened to play Jon a track at a party or something, Jon loved it, and came in to sing on a couple of tracks — which I was very excited about. I listened to it and thought, "God, it sounds amazing." So we asked if he'd like to join the band, which he did. And only then did it become Yes. The main point of this is that Jon and I never really worked together. He kind of worked on top of this existing structure, which was very embedded, very cast in stone, and there was very little movement that he could get involved with. Then came *Big Generator,* and consequently other stuff, and I could feel the frustration in Jon that, although he was involved, it was basically me writing the songs and Jon trying to work on top of them. So when this project came up, I thought, "Well, if I'm going to be the producer, then I really need to look at how the thing's going be done in the best possible way." So I realized, the best possible way is, if Jon's the singer, then I need to work real closely with him to provide him with the best possible platform to sing on. And you know, Jon singing his lyrics, he feels much more comfortable with it. So I wrote a lot of stuff and went over. He was staying at a motel on the beach in San Clemente, and I rented a room there for a week or two. We just sat there and banged all the stuff out.

"THERE WAS A LOT OF PRESSURE FROM THE RECORD COMPANY. IT WAS A BIG BUDGET, AN IMPORTANT DEAL. AND SO IT WAS A BIT RECKLESS OF ME, BUT I DECIDED THAT THE WHOLE ALBUM WAS GOING TO BE DONE RANDOM-ACCESS ON DIGITAL PERFORMER."
TREVOR RABIN

What did you bang it out on?

An acoustic guitar and two ghetto blasters, one to play my demos from and another one record the live vocals on. It was real high-tech [*laughs*]. Bottom line, that's how we did it. So rather than get Jon in at the last possible moment, I got him involved. The two of us really worked hard as a team on it, which led to it being a better album for us.

So Jon's songwriting input was kept exclusively in the lyrical realm?

Mostly lyrics, but he had some melodic input. There's a song called "I'm Waiting" where he wrote a lot of the melodies on an existing back track. So he was involved, moreso than any album I've ever done with him before.

You did some serious hard disk recording on this project with Mark of the Unicorn's Digital Performer. Care to detail your adventure?

First of all, I've always been into looking at all the new stuff. Every new bit of gear is always in my studio; that kind of thing. Just looking at the cumbersomeness of tape recorders, be they digital or analog . . . you know, analog tape is so sophisticated now, particularly with [Dolby] SR, that the difference in sound between that and digital is six of one, half dozen of the other. They're both good. At the end of the day when people are listening to a record, they're not going to notice what the dynamic range is, or what the hiss is. They're going to listen to the song. So I thought, "What is the most important thing?" The most important thing to me was to be able to manipulate the stuff, and move the stuff, and be able to do anything I wanted to do with it without having to worry about rewind and stuff like that. That really frustrates me. When Digital Performer first came out, I was just blown away by the possibilities. I thought, "Jesus, this is exactly what I've been waiting for. This was made for me." Obviously it was a new thing. Digital Performer, just like Opcode's Studio Vision or any of the other digital audio sequencers, was very far from being ready. You know what happens, the guys who develop the stuff are kind of a quarter of the way through, and the guys who hold the balance sheets and the marketing plan say, "We've gotta put it out." And the developers say, "No, no, we're not ready." As you know, that happens all the time. So nothing ever comes out that's ready. My advice would be: Anyone who says there's this new piece of gear, wait six months . . . or more.

Did you feel like a beta-test site during this project?

To put it kindly, I was a guinea pig. But I must say the people at MOTU were incred-

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ibly supportive, to the point where they flew people out when I had a problem. Because of the beta aspect, there were a lot of things I was suggesting to them which were being put into the program. And so when those things went wrong, I couldn't simply phone up. They were just incredible, and the people who design the stuff there are amazing — they got me through the album. I wish Digital Performer had been at the stage it is now when I started the album.

You must have been familiar with Performer prior to going Digital.

Oh yeah. To me, Performer is the most attractive sequencer to work on. And that's personal. I know friends of mine who say the same about the other stuff. It's what you're used to. They're all good, but I find Performer works more like a studio and a recorder, as opposed to some of the stuff that comes from a drum machine point of view. Digital Performer . . . it was just intriguing, even though I thought to myself, "I'm really taking a chance here." There was a lot of pressure from the record company. It was a big budget, an important deal. And so it was a bit reckless of me, but I decided that the whole album was going to be done random-access on Digital Performer.

So other than the MIDI tracks, every sound was sitting on your hard disk?

It still is [*laughs*].

For such a big album project, how did you work around the limited number of tracks?

I thought, "Okay, right now there's only four tracks. I've gotta find a way of getting more tracks." So there are bits and pieces obviously that I did on 24-track tape — things like multiple backing vocals I would do on tape and then transfer it over and bounce down to two tracks on Digital Performer. But I needed more tracks, so the first couple of things I still had to do with the tape. I thought, "This is still cumbersome, because although I can work fast at certain times in Digital Performer, I still have to come back to this noose around my neck called the 24-track" [Sony's MCI 24-track analog recorder with SR]. About a quarter of the way through the album I thought, "I've gotta get more digital tracks. We've gotta be able to do something different here." The engineer I got, who was tremendous, was a guy called Michael Jay. He was very familiar with audio/video post-production stuff. He was someone I could rely on. One of the things we did was we got a [Timeline] Micro-Lynx.

Trent Reznor told us he had nothing but trouble with his Micro-Lynx. It did work for you, though?

Oh yeah. It was tremendous. Jeff Evans, who helped us with it, was tremendous. It couldn't have been done otherwise. What they [MOTU] have done, subsequently, is that MIDI now clocks to the audio. There's a thing called Continuous Sync in Digital Performer which worked out to be just phenomenal. But I said to Mike [Jay], "Look, we're doing this album on Digital Performer, the whole thing." And he looked at me as if I was completely fucking nuts. But ultimately we got eight tracks, we tied it up, and then we got Ethernet so we could move from one hard drive to the other. The Micro-Lynx is what tied all the units together. In the end we had four Macs running — 16 tracks.

How much hard disk space were you dealing with?

Well, that was the second criterion for me: I needed to get a hard drive that wasn't going to work at 25 milliseconds. The best I came across was this company called Dynatek. I got ahold of Lorne Wiener and, like MOTU, he was so helpful. I almost feel like giving him a co-production credit on the album.

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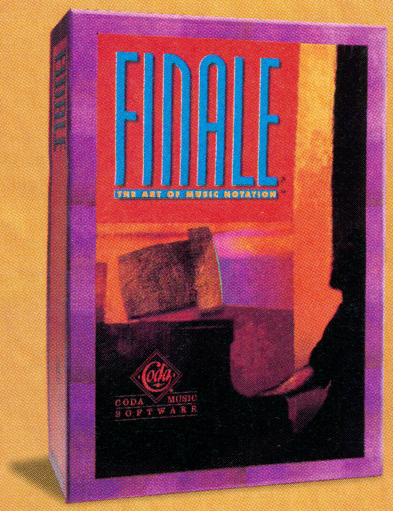

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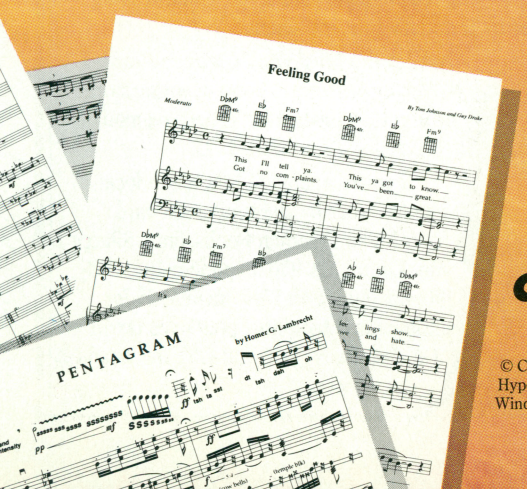

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When we hear about albums that "were done entirely using hard disk recording technology," it's seems hard to believe. For example, obviously Alan White didn't set up his drums in your living room and record straight to hard disk, did he?

No, you're right. [*White's drums were recorded at A&M Studios, then transferred to hard disk.*] But this is one of the best things about it. Usually when you go in and you're doing drum tracks, you're faced with the cumbersomeness of tape recorders. You're dropping this in, cutting this, and you end up with a warehouse of 24-track tapes that have this take and that take, and so on. So he'd do a take, and maybe the first verse would be phenomenal, but the next wouldn't be quite so good. So we spent weeks and weeks looking for the best takes, but this time we stuck them all on the hard drive.

When he was tracking, did he play to sequences or tapes that you prepared?

There was some of that, some of the band playing live, it was a real mix-up of stuff. But the point is that all the stuff was subsequently put into Digital Performer. I want people to realize that this is not an album that was done with a sequencer: This is a band playing together. One of the main reasons I used Digital Performer was to get the most natural and spontaneous takes I could out of everybody. When I was doing the keyboards, very rarely were MIDI tracks quantized. I really wanted it to sound natural. Even the song "Talk," where it goes dada-dada-dada-dada-da, I played that. I didn't want to quantize it. There were certain parts where it might have gone a little bit outside, so I'd 80-percent quantize. I hate the feeling of everything being quantized.

Even though you ended up with four Macs, you still were very limited in terms of mixing capabilities. Using the drums as an example, did this mean you had to premix the drum performances from, say, 24 tracks down to two very early on — thus committing yourself long before the actual mixdown sessions?

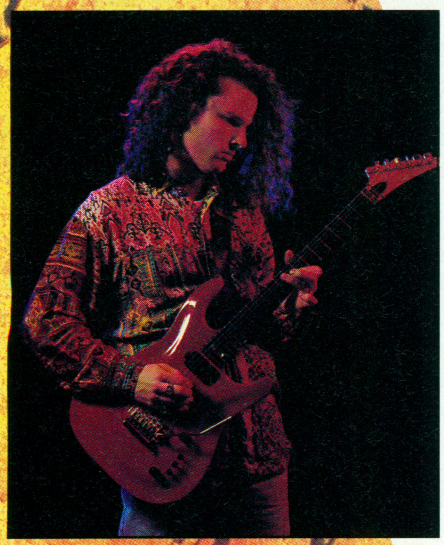
Yeah, a lot of early decisions had to be made, which often scared the living daylights out of Mike, who, if it didn't work out, had to go and retrieve the other stuff. It was scary. A lot of early decisions had to be made, and also, given the memory limitations and the possibility of crashing, we would do one track and then mix it, then do another track and then mix it, and so on.

Were there regrets afterwards — when you were four instruments into the song and you realized that hi-hat was way too loud?

All the time. All the time.

So at that point did you try to repair the track by re-EQing it, or did you have to go back to square one?

Both. The difficulty for me was . . . ultimately, what I'd love to have is everything in just one big Macintosh. You know, 64 tracks in one Mac with 250 gigabytes in there. Just before the project, I bought a new mixing board, 'cause we did it all at my house. I got the DDA Profile, which turned out to be quite nice, and I got the Uptown Automation. Ultimately, though, I'd like to get rid of everything and hope that I can do everything in one Macintosh so I don't have to move from one thing to the next. There was a lot of duplication going on because I had to do everything in four Macs. If I chopped a verse from one, then I'd have to go in and do the same on the other Mac, and then the other Mac, and then the other Mac. One big Mac, that's what I want. ■



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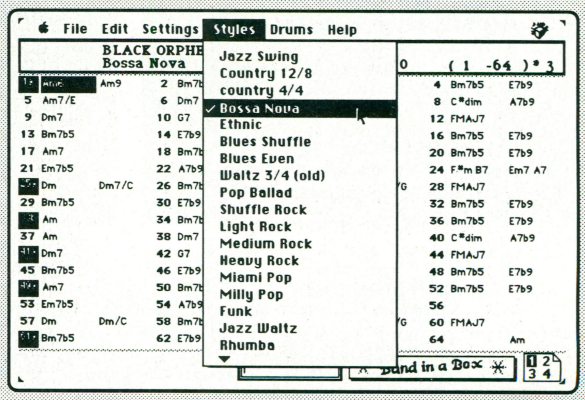

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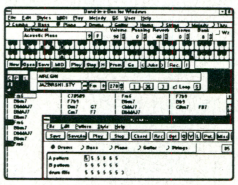

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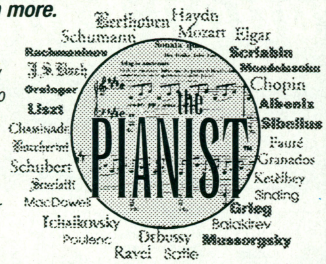

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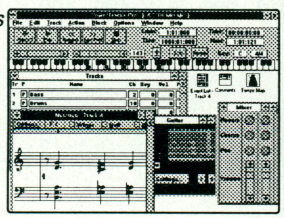

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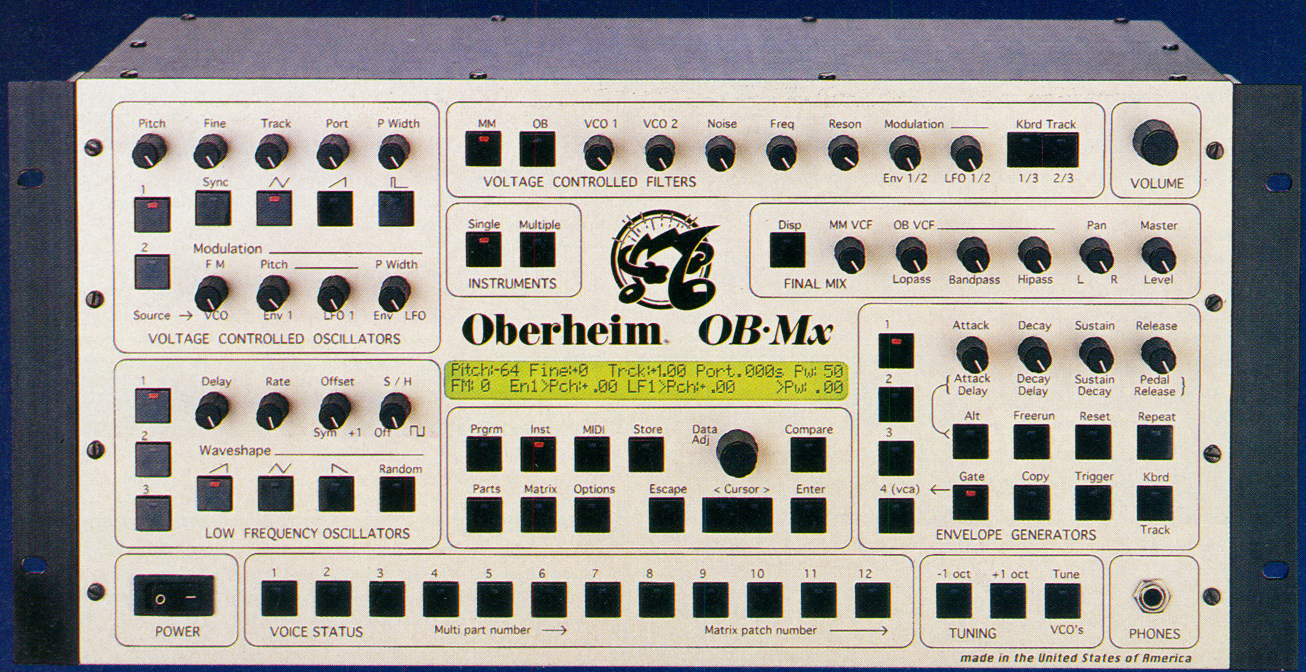

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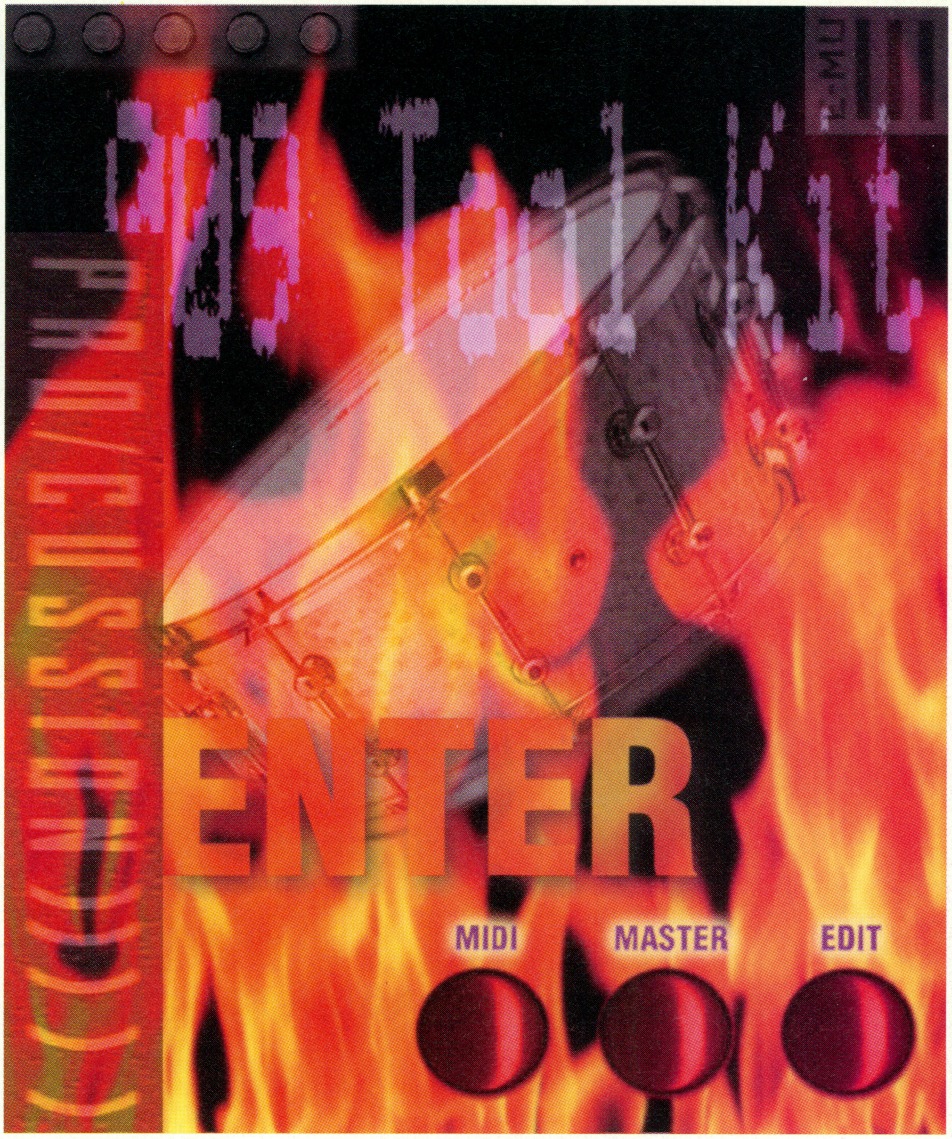

UNLOCKING THE E-MU PROCUSSION

6 PROGRAMMING SECRETS YOU ABSOLUTELY HAVE TO KNOW

BY GERRY BASSERMANN

For many users, the large number of 16-bit ROM sounds is the Procussion's big hook: no searching through countless disks, no time wasted loading soundfiles, no "not enough memory" messages. Speed is of the essence, the producer's at the door . . . the drum module is here!

Despite its appearance, the Procussion is not simply a Proteus full of drum sounds. Beneath its shy, single rack-space exterior lurks a labyrinth, a secret garden, a diet of drummerly delights. The 64 factory kits illustrate some of those features quite well, while others remain sequestered deep inside the edit menus. What follows are some of the more useful programming techniques you can use to create the sounds you want.

We assume you are familiar with the Procussion's basic functionality, and that you know how to navigate through its operating system. Consult

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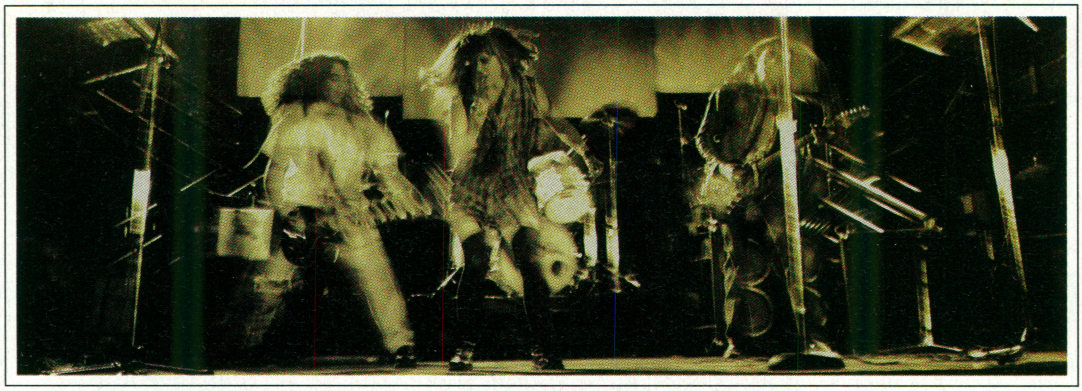

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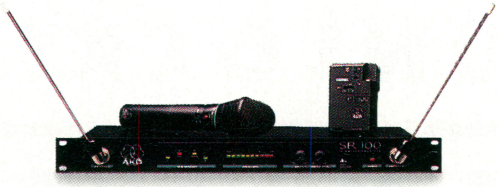

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the manual if you need assistance in either of these areas.

ESSENTIAL TECHNIQUES

Multitimbral Power. Many people still use only a single MIDI channel for drums. In the case of the Procussion, that means living with the particular sounds in a factory ROM program as well as their preprogrammed stereo images and parameter settings — unless you're up for creating a custom kit for each song. The fast track to getting customized kits is to use multiple MIDI channels to access individual sounds from a variety of kits. Since the drum mapping is consistent among all of the Procussion ROM presets that are drum kits, you can easily run your multitimbral drum sequence and audition, say, kick drums, simply by selecting different kits on the MIDI channel you've designated for the kick. Use the same technique for the snare, hi-hats, etc. In this way, the "custom kit" setup information can be conveniently stored within the sequence (or, in the case of electronic drum pads, in the memory of the controller).

With single-MIDI-channel percussion parts, end-of-song fade-outs tend to sound too simplistic when MIDI Volume (controller 7) is used on all of the drums at the same rate. Multitimbral setups allow you to fade each drum individually, which will sound more like a fadeout that was done on an automated console. This is true even when all the MIDI channels are playing the same kit. Also, whether you're pointing to one or to many kits, using multiple MIDI channels allows you to reposition each drum's stereo image using MIDI controller 10 (which, like controller #7, is hard-wired in the Procussion). Be warned, however, that once you've sent a pan message, you won't be able to get back to the preset "kit" panning via MIDI; that can only be done from the front panel.

Finally, since most of the factory ROM kits have controller messages routed to multiple sounds, there's no way to use a single MIDI channel and have modulation control one sound without affecting others in the same kit. For example, the kit "Rap Session" contains stacks that use the mod wheel (controller 1) to add delay effects to the snare *and* add sustain to the bass. Only by using multiple MIDI channels can you modulate the two sounds independently.

Kit Modulation. Many of the Procussion's factory presets leave the second Kit Modulation parameter disabled. Here are a couple of suggestions on how to use it:

Gated Snare. Select Kit 000 "Ampitheater" (sic) and hit the Edit button. Use the data knob to dial up to the Stack Select menu and hit the *D1* key on your controller to select Zone 03, S115, "Ambi-Snr 1," a snare sound with lots of ambient decay. (The Procussion automatically selects zones for editing when a key is played via MIDI, so long as Auto-Select in the Master menu is enabled.) Dial up to Mod Enable and cursor over to turn 2: to "on." Press Enter, which returns the cursor to the top of the menu, dial up to the Modulation screen, and select Modulation 2. Cursor down to the bottom line of the display and set up a virtual patch cord so that the decay time of the snare ambience can be affected in real time by a MIDI controller. A good choice to use with the Procussion is the pitch-wheel (PWhl), because it's not set up in the factory kits to modulate anything except the pitched bass sounds. Set this up by changing Key (the mod source parameter) to PWhl, then cursor over and select Decay as the destination with a mod value of +127. Now play *D1* and pull back on the pitch-wheel of your controller to gate the reverb. Alternately, a negative pitch-wheel controller value can be entered in the sequence track at the exact time of the cutoff; use the same technique for cymbal chokes.

Filter Toms. Again, start with the "Ampitheater" preset. This time we'll select multiple zones in the Mod Enable screen. Hit *E1*, cursor over to 2: and turn it "on." Do the same for *F1*, *G1*, *A1*, and *B1* (the basic tom set for this kit). Now dial up to Modulation 2 (as above) and set velocity (Vel) to modulate Tone, with a value of +127. Now the toms in this kit play with darker timbres at lower velocity levels.

Nontranspose Mode. Drum parts — especially rolls and flams — are often a complete drag to play on a keyboard; hitting the same plastic key evenly is extremely difficult. All Procussion factory drum kits have the basic kick and snare sounds (*C1*, *D1*) repeated in the note range *F2* to *E3*. The drums in this range are in non-transpose mode, so they appear on multiple keys at the same pitch. This allows you to roll your fingers and execute difficult drum maneuvers easily. For greater dynamics when rolling to the right, enable Modulation 2 (as above) for the snare zone (06) and set Key position to modulate Tone with a value of +20 to +40.

Exclusive Assignments. Look at the Assignment settings in the "Ampitheater" preset for zones 21 through 24 (*F3* to *B3*); notice they're all set to "Exclusive 3." When you play the hi-hats in this range, each new note cuts off the currently sounding note, just as would happen with real hi-hats. There are eight of these Exclusive modes, each of which functions as a software mono mode. These modes are extremely powerful for creating realistic effects as well as for restricting voice-channel consumption to prevent polyphony from running out. For another application of Exclusive modes, play *E2*, which works in conjunction with MIDI controller 01 (normally assigned to the Mod Wheel).

STACK MAGIC

Customizing Stacks. Say you want to add some fat to a sound — that's the time to get down and tweak at the stack level. For this example, we'll work with the snare drum in Kit 003, "Palladium."

First we need to swap the ROM stack for an editable RAM stack. Enter Edit mode and turn the data knob to select the Stack Select menu. Hit any key to see which stack is assigned in that range; choosing *D1* selects stack S163, "TamSnare 2." Dial up the Copy Stack menu, then cursor to Factory Stacks and press Enter. Select stack 163, press Enter, then select 001 and press Enter. Next, dial down to Stack Select and substitute the new RAM stack S001 for S163 in Zone 03. The two stacks should sound exactly the same and have the same name because S001 is a copy of S163; the only difference is that the new custom stack (001) can be edited.

Dial up to Stack Inst and cursor across the top line to L1 (Layer 1). Turn the data knob to select L3; the display will read "I000 None." Cursor down and select a sound for Layer 3 that will add some body to the stack (try I014, "Dry Snare 2"). Dial up to Stack Tune and offset the pitch (use Crse +02 semitones). The next menu screen is volume for Layer 3; adjust as desired.

The sonic possibilities of layering are many and varied. For example, a more esoteric drum to add might have been kick drum 008, "Wet Kick 3," tuned up +8 semitones. In any case, copying factory stacks into the kit, changing

ABOUT THE AUTHOR

Gerry Bassermann is a composer/musician living in San Francisco, and a former product specialist at E-mu Systems.

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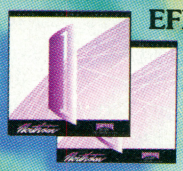

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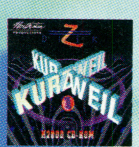

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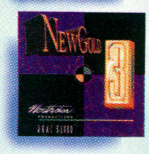

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or adding drum layers, and editing the parameters is a great way to familiarize yourself with the world of the Procussion stack.

Creating stacks from scratch gives you complete control over the Procussion, but the Edit menus can be a bewildering maze of zones, layers, modulation routings, and switches. Here's a process to help keep things clear:

Start by making a programming template — a kit with an empty custom stack assigned to a single zone spread across the entire keyboard range. The easiest way to do this is to select kit 014, "Vibrations," press Edit, dial to Stack Select Z01, and change the stack from S378 to S001. Then dial up to Tuning and set the Coarse parameter to 00. Rename the kit, and save it to RAM (memory locations 064 through 127). Now you have a basic programming environment consisting of a single stack tuned across the entire keyboard note-range, with the stack's original pitch at *E♭3*. This is an especially good base for creating stacks, as the Procussion can pitch-shift the drum waves with virtually no distortion, thus producing useful tones at many transpositions along the keyboard. If you develop a stack within a more confined note range, you might be unaware of the timbral possibilities found at some distance from original pitch.

Custom Stacks, Part *Deux* — the Complete Tutorial. As demonstrated above, layering drum waves is an extremely fast way to produce new percussion timbres. That technique is, in fact, the basic design concept of the Procussion as a toolbox for building sound. This approach invites creation from musicians who don't necessarily consider themselves sound designers, but who may wonder, "What if I layered a tuned-up kick with a tuned-down snare and a rap bass, and then threw in a tambourine?" The answer is only a few knob twists away as you cursor around the Stack Inst screen and choose four stacks to layer (say, L1: I006, "Wet Kick 1," L2: I014, "Dry Snare 2," L3: I011, "Rap Kick," and L4: I065, "Tamborine").

Simply stacking four waves, however, usually produces only a sonic lump. The first element of order to impose is the general tuning of each layer. With all four waves sounding simultaneously, it's often difficult to gauge

the pitch (or other parameter setting) of an individual sound. So when checking settings, use the Audition Layer option (located toward the top of the edit menus), which allows you to "solo" the layer you wish to edit. In the Stack Tune menu, try tuning the layers in this example to L1: Crse +05/Fine –50, L2: +00/+50, L3: +01/+00, and L4: +00/+50. This will result in a stack that sounds like an effect in the lower note range, a beefy house snare in the mids, and a synth roto-tom up high.

The rest of the stack edit screens are pretty straightforward; here are some guidelines:

Stack Vol. (Stack Volume). Don't spend too much time getting the exact level balance until after you've set up the sensitivity controls in Stack Mod. It's helpful to hear all the layers clearly as you modulate them, so leave their volumes all the way up, set their velocity and key position controls, and then return to Stack Vol. to adjust their levels as necessary.

Stack Pan. Excessive panning of the sounds in the stack can ruin the illusion of the stack being a single drum — especially when you're combining dissimilar drums. To see the effect of too much panning, take the custom stack we just created and spread the sound across the stereo image (try –7, –2, +2, and +7). Notice how the effect sound in the bass range is cooler, but the rest of the keyboard range, which wants to be one drum, now sounds disjointed and much less powerful.

Delay Start. You can use this parameter to create DDL-type effects. Select I032 Dance Snare for all four layers, dial up to Delay Start, and enter the values L1: 00, L2: 16, L3: 26,

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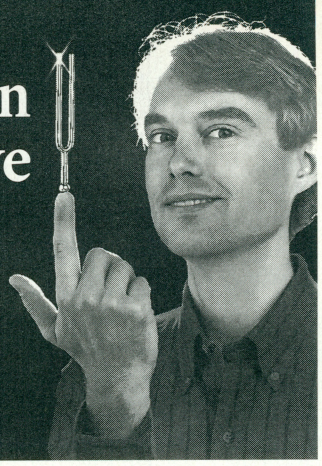


The TRUE STORY by David L. Burge

IT ALL STARTED in ninth grade as a sort of teenage rivalry.

I would practice the piano for five hours daily. Linda didn't practice anywhere near that amount. But somehow she always seemed to have an edge which made *her* the star performer of our school. It was frustrating.

What does she have that I don't? I would wonder.

Linda's best friend, Sheryl, sensed my growing competition. One day she bragged on and on about Linda, adding more fuel to my fire. "You could *never* be as good as *Linda*," she taunted. "*Linda's* got *Perfect Pitch*."

"What's Perfect Pitch?" I asked.

Sheryl gloated over a few of Linda's uncanny musical abilities: how she could name any tone or chord—*just by ear*; how she could sing any pitch she wanted—*from mere memory*; and how she could even play songs after only *listening* to them on the radio!

My heart sank. *Her fantastic EAR is the key to her success* I thought. How could I ever hope to compete with her?

But later I doubted Sheryl's story. How could anyone *possibly* know F♯ or B♭ just by *listening?* An ear like that would give someone a mastery of the entire musical language!

It bothered me. Did Linda *really* have Perfect Pitch? I finally got up the nerve and point-blank asked Linda if the rumors were true.

"Yes," she nodded to me aloofly.

But Perfect Pitch was too good to believe. I rudely pressed, "Can I test you sometime?"

"OK," she replied cheerfully.

Now I couldn't wait to make her eat her words...

My plan was ingeniously simple:

I picked a moment when Linda least suspected it. Then I boldly challenged her to name tones for me—*by ear.*

I made sure she had not been playing any music. I made her stand so she could not see the piano keyboard. I made certain other classmates could not help her. I got everything just right so I could expose Linda's Perfect Pitch claims as a ridiculous joke.

Nervously, I plotted my testing strategy. Linda appeared serene.

With silent apprehension I selected a tone to play. (She'll *never* guess F♯!)

I had barely touched the key.

"F♯," she said.

I was astonished.

I quickly played another tone. She didn't even stop to think. *Instantly* she announced the correct pitch.

Frantically, I played more and more tones, here and there on the keyboard, but each time she knew the pitch—without effort. She was SO amazing—she could identify tones as easily as *colors!*

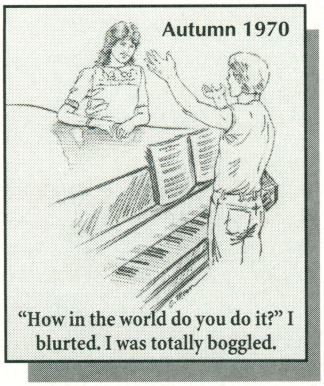
"Sing an E♭," I demanded, determined to mess her up.

With a bare pause she sang the proper pitch. I had her sing more tones (trying hard to make them increasingly difficult), but still she sang each one perfectly on pitch.

I was totally boggled. *"How in the world do you do it?"* I blurted.

"I don't know," she sighed. And to my great dismay, that was as much as I could get out of her!

The dazzle of Perfect Pitch hit me hard. My head was dizzy with disbelief, yet from that moment on I knew that Perfect Pitch is real.



"How in the world do you do it?" I blurted. I was totally boggled.

I couldn't figure it out...

"How does she DO it?" I kept asking myself. On the other hand, why doesn't *everyone* know musical tones by ear?

Then it dawned on me that *most musicians* can't tell C from C♯, or A major from F major—like artists who brush painting after painting without ever knowing green from turquoise. It all seemed so odd and contradictory. I found myself even more mystified than before.

Humiliated and puzzled, I went home to work on this problem. At age 14, this was a hard nut to crack.

You can be sure I tried it myself. I would sweet-talk my brothers and sisters into playing tones for me so I could guess each pitch by ear. My many attempts were dismal failures.

So I tried playing the tones over and over in order to memorize them. I tried to feel the "highness" or "lowness" of each pitch. I tried day after day to learn and absorb those elusive tones. But nothing worked. I simply could *not* recognize the pitches by ear.

After weeks in vain, I finally gave in. Linda's gift was indeed extraordinary. But for me, it was out of reach.

Then came the realization:

It was like a miracle. A turn of fate. Like finding the lost Holy Grail.

Once I had stopped *straining* my ear, I started to listen NATURALLY. Then the incredible secret to Perfect Pitch jumped right into my lap.

I began to notice faint "colors" within the tones. Not *visual* colors, but colors of *pitch,* colors of *sound.*

They had always been there. But this was the first time I had "let go"—and *listened*—to discover these subtle differences within the musical tones.

Soon I too could recognize the tones by ear! It was simple. I could hear how F♯ sounds one way, while B♭ has a different pitch color sound—sort of like "hearing" red and blue!

The realization hit me: THIS IS PERFECT PITCH! This is how Bach, Beethoven and Mozart could mentally envision their masterpieces—and identify tones, chords and keys just by ear—*by tuning in to these subtle pitch colors within the tones.*

It was almost childish—I felt that *anyone* could unlock their own Perfect Pitch by learning this simple secret of "color hearing."

So I told my best friend Ann (a flutist) that *she* could have Perfect Pitch too. She *laughed* at me.

"You have to be *born* with Perfect Pitch," she asserted.

"You don't understand how Perfect Pitch *works*," I explained. "It's *easy!*"

I showed her how to listen. Timidly, she confessed that she too could hear the pitch colors. Soon Ann had *also* acquired Perfect Pitch! We became instant school celebrities. Students tested us in great amazement. Everyone was awed by our virtuoso ears.

Back then I would not have dreamed I would later explain my discovery to college music professors. When I did, many of them *laughed* at me at first. You may have guessed it—they told me you had to be *born* with Perfect Pitch.

But once I revealed the *secret* to Perfect Pitch—*and they heard for themselves*—you'd be surprised how fast they'd change their tune!

As I continued with my own music studies, my Perfect Pitch allowed me to progress far faster than I ever thought possible. I even *skipped over* two required college courses. Perfect Pitch made *everything* much easier—performing, composing, arranging, sight-reading, transposing, improvising—and it enhanced my *enjoyment* of music as well. I learned that music is definitely a HEARING art.

And as for Linda?

...Oh yes—well, time found us at the end of our senior year of high school. I was nearly 18, and it was now my *final chance* to outdo her.

Our local university sponsored a high school music festival each spring. That last year, I scored an A+ in the most advanced performance category. Linda only got an A.

Sweet victory was music to my ears—mine at last!

TODAY, thousands of musicians and *two university studies* have confirmed my Perfect Pitch method. *Now I'd like to show YOU how to discover your own Perfect Pitch!*

I hope *you* won't laugh as you picture yourself with various Perfect Pitch skills—like naming tones and chords by ear with laser-like precision! Of course, you might be surprised at how *simple*—and just how *valuable*—Perfect Pitch really is!

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and L4: 35 into the first data field so that the drums fire sequentially in sixteenth-notes at roughly 120 bpm. Now vary the sample start times — the second data field — so that each successive drum has less and less attack transient (try values of 000, 040, 060, and 080) for a smooth delay trail. Shaping the layer volumes (try 127, 112, 100, and 72) and pan positions (use 0, 0, –4, and +5) adds a lot to the sound.

Reverse. Let's use this parameter to make a backward/forward "whoosh" sound effect. First, make sure you've "zeroed out" all of the parameter settings from the previous examples. Now assign I044, "Electro Tom" to Layers 1 and 2. Reverse the sound on Layer 1 and delay Layer 2. It's important to decide the pitch of the sound on Layer 2 before setting its delay amount, because the pitch setting affects the amount of perceived delay. At $E\flat 3$, Layer 2 delay should be around 39. You might want to soften the attack of the overall sound by advancing the sample start time of Layer 1 (try values around 44).

Be aware that some Procussion drums have such a long decay to silence (or even have "dead air" at the end of the sample) that it's difficult to play the reversed sound because there's little or no sound on key-down. Use the sample start parameter to truncate the low (or no) energy region. If you need to radically reshape the crescendo, offset the start time by a greater amount, and adjust Alt Env Attack to fade in from the new point. This technique is especially helpful when you've chosen to use a transposed pitch for timbral reasons (say, a cymbal tuned down two octaves), but need the sound to fully develop within a few seconds.

Alt. Env. (Alternate Envelope). Use this envelope to make drums that have different lengths conform to a single length when combined in a stack. In the tutorial stack created above, for example, tighten the longest sounds — the wet kick and tambourine — by turning the L1 and L4 envelopes "On" and setting their Hold and Decay values to H06 and D12. This way, all the sounds in the stack have the same approximate duration.

Putting It All Together. Great stacks come when you combine several of the techniques we've covered. For example, you can make a cracking snare using the attack of one drum (I024, "Dry Snare8c," with the Alt Env set to H04 and D02) and the body and ambience of another (try I026, "Wet Snare 2," with Delay Start set to 02 and 024). Tune "Wet Snare 2" to +01/+60 to match the attack of the dry snare. Since the second layer is now largely ambience, try assigning "Wet Snare 2" to Layer 3 as well, using the same settings as for Layer 2. Now pan Layers 2 and 3 hard left and right to simulate stereo reverb. (Vary their Tuning and Delay settings slightly for more stereo effect.)

This snare has the crack to ride over a heavy rhythm track, but if you want to add some fat, try mixing in a "thud" on Layer 4 to create body that's felt more than heard. Good choices for this kind of effect are "Machine Kicks" 1 and 2 (I009 and I010) tuned to the basic pitch of the overall sound (in this case, +11/+00), and mixed into the stack at a fairly low level (try setting the layer's volume to 72). In this stack, the whole is definitely greater than the sum of its parts — and that's what the Procussion is all about.

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[Copyright & FAIR USE the Law]

[by Negitivland]

A Report on the Supreme Court's Decision in the 2 Live Crew "Pretty Woman" Case

Although popular media accurately reported the unanimous decision handed down by the U.S. Supreme Court in the 2 Live Crew "Pretty Woman" parody case last March as positive for the group, it generally missed the fact that the Court didn't in fact decide the outcome of the case: They just instructed a lower court how to evaluate one aspect of it. More importantly,

illustration: Dennis Irwin

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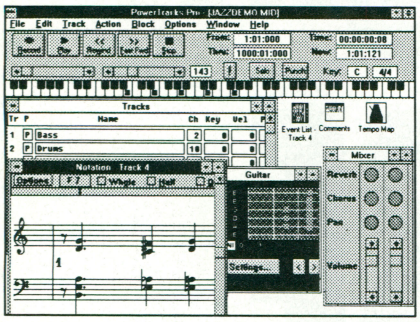

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it missed the fact that the opinion, now the law of the land fully as any statute enacted by Congress, has repercussions far beyond this case, beyond even parody in general.

The decision constituted the most significant clarification of copyright law's "fair use" guidelines in the electronic age, clarifying what kinds of re-use of copyrighted material U.S. courts may find allowable. In so doing, it materially narrowed the definition of infringement for all copyrightable media. Another recent Supreme Court decision, *John Fogerty vs. Fantasy Inc.*, also discourages the filing of infringement suits by making it easier for some defendants who successfully fight off a copyright suit to get their attorneys' fees paid by the other side. In discussing their underlying reasoning, both opinions stress U.S. copyright law's original but lately forgotten purpose of promoting the creation and circulation of new works, and make it clear that copyright's protection of existing works arises not from inherent property rights but from that purpose, and must end where it would inhibit the creation of valuable new works.

Although fair use is a part of the same copyright law that prohibits out-and-out record piracy and similar whole, uncreative mass duplication of pre-existing tapes, CDs, videos, books, etc., for profit alone, those kinds of abuses have nothing to do with fair use, and the new guidelines don't promote them in any way. Still, creators of copyrightable works need to be aware of these changes — especially if they anticipate involvement in litigation over a creative reuse of copyright-protected material, whether as plaintiff or defendant.

Before we examine the 2 Live Crew decision in detail, we need to explain how fair use works. But in order to understand fair use, a basic knowledge of copyright law is necessary.

THE DAWN OF COPYRIGHT

"If creativity is a field, then copyright is the fence." —*John Oswald*

Given the boggling chasm between, on the one hand, the prevailing notion that copyright is somehow supposed to exist for the benefit of creators and, on the other hand, the obvious inhibiting effect that excessive intellectual property protection measures have had on artists and technological innovators in recent years (*i.e.*, unreleaseable sampling masterpieces, basic software patents stifling designs, etc.), we found it darkly satisfying to learn that the first real copyright law was invented around 1662 not in order to protect the rights of creators in their own work, but rather as a means for *publishers* in England — working in cahoots with the crown, which wanted to suppress the distribution of dissident material — to monopolize their bookselling business. The rights went to the publishers, not the writers, and, rather than rewarding creators, actually suppressed all unapproved writers' work. Eventually this first try at protection was discarded as a bad idea.

The 1709 Statute of Anne for the first time granted exclusive rights in books to the authors who wrote them, aiming to avert financial losses due to pirated printings specifically "for the Encouragement of Learned Men to compose and write useful Books." Captioned "An Act for the Encouragement of Learning," the statute granted this monopoly to authors for a limited time only, in recognition of the fact that to the extent that the books' duplication and circulation was limited, learning was in fact discouraged. This is the tension at the core of copyright in a free society: the need for creators to be adequately compensated vs. the societal imperative of free flow of information and the resulting progress of the culture.

With the formation of the U.S., protection of private intellectual property was again cast in terms of promoting a public good. The U.S. Constitution (1787) outlined the basis for our copyright law: "The Congress shall have power . . . [t]o promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries. . . ." Note that the duration of copyrights is limited (whereas physical property rights are ordinarily perpetual), that the benefit afforded to the creator is expressed as subordinate to the purpose (not central), and that Congress had to enact a law to create copyright (it wasn't seen as a natural, pre-existing right).

THE AUTHORS

Negativland is a group that has been sued twice for copyright infringement over collage and parody works, and has recently devoted itself to advocating a reform of U.S. copyright laws.

The idea expressed in the Constitution and later codified into a succession of copyright laws — culminating in the Copyright Act of 1976 — is generally to grant the copyright holder a monopoly on the work as regards: reproduction of the work; preparing derivative works (*i.e.*, translations, new musical arrangements, adaptation to other media, condensations, etc.); public distribution of copies via sale, rental, lease, or lending; for performable works, public performance; and for displayable works, public display. That list enumerates the maximum extent of the protection the law gives a copyright holder, as there are limitations for certain media. Copyright protects only "original works of authorship fixed in any tangible medium of expression," not facts, ideas, processes, physical inventions, slogans, short phrases, typographical design, or trademarks. Another important limitation is fair use, which describes how a particular use of a work may be found to be exempt from the copyright holder's monopoly.

FAIR USE

"If copyright is a fence, then fair use is the gate." —*Negativland*

The fair use principle, first established in an 1840 case over a biography of George Washington that was abridged from another, allows the reuse of otherwise copyright-protected material without permission or payment of fees of any kind under certain circumstances. It's a defense to a copyright infringement lawsuit that acknowledges that many kinds of reuse can promote cultural progress without excessively harming the item's owner, and that those uses should be free (recall that the aim is to balance the private good against the public good, not to give copyright holders complete control over all possible aspects of a work). Just as copyright is limited, fair use allows only limited cultural reuses.

The fair use principle was first solidified into statute in the Copyright Act of 1976. The law is worded vaguely, partly because the kinds of use that might be fair are so numerous and diverse that no complete formal expression of

Keyboard presents this article for our readers' information, not as legal advice. The issues discussed can be highly technical, and the "right" course of action could differ dramatically in apparently similar situations. The author is not a lawyer, and anyone confronting the questions that this story addresses should consult a lawyer before acting.

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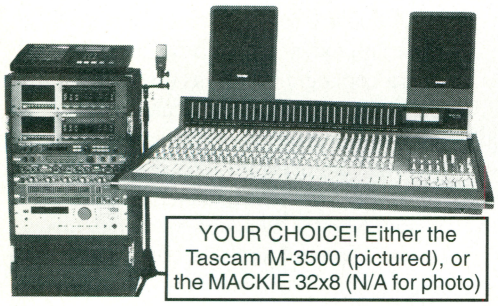

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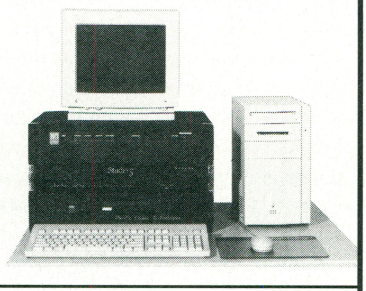

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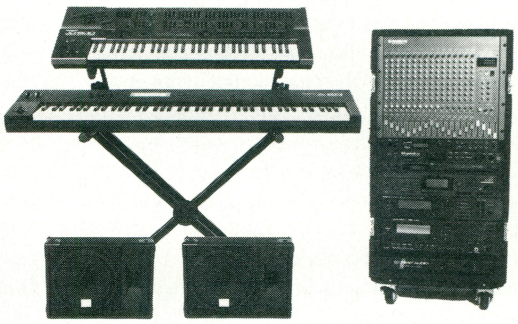

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DIRECTIONS: Select words from the WORD LIST below and enter them going across in the "Word Puzzle Grid". Put words with 3 letters in the rows with 3 spaces and words with 5 letters in the rows with 5 spaces. The middle letters in each word will spell out the "Key Word" in the middle column. (Use the "Key Word Clues" to help you figure out the Key Word.)

FOLLOWING the correct completion of the puzzle below, there will be four more puzzles ($2.00 each) and a tie-breaker ($1.50) for each of the three contests. You will receive each puzzle in the mail, and you will have at least three weeks to solve it. Although we can't tell how many people will enter the contests, or how many will solve the puzzles correctly, we believe that approximately one-half will correctly solve the round ONE puzzle; one-third will solve the round TWO puzzle; one-quarter will solve the round THREE puzzle; and one-fifth will solve the round FOUR puzzle (these figures are estimates, actual results may vary). Each prize package will have its own elimination. The winner will be determined by the tie-breaker. If players are still tied after the tie-breaker, each will win the package he/she is playing for.

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WORD LIST	
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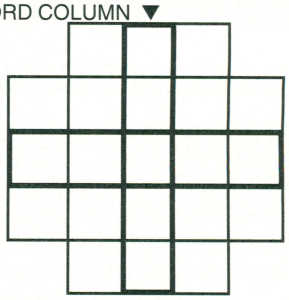
SET	START
SUM	EAGLE

KEY WORD COLUMN ▼



WORD PUZZLE GRID

KEY WORD CLUES: It has 88 keys, anyone reading this magazine can probably play one, it's the opposite of "forte".

*Some items optional. This contest void where prohibited by law. Entries must be postmarked by July 15, 1994. Payment must be included with entry form. Only one entry per person. Employees and their families of The House of TEMPO, Inc. and its suppliers are not eligible to win. The judges decisions are final. In the event of judicial error, the sponsor is liable only for refunding the amount of entry fees paid. Sponsor is not responsible for late, lost or misdirected entries. The manufacturers listed above have no affiliation with this contest or The House of TEMPO, Inc.

what definitely is and isn't fair use was thought to be possible. Instead, the law lays out certain "factors" to be considered by a court to determine whether the particular use before the court is fair:

"§ 107. Limitations on exclusive rights: Fair use.

"Notwithstanding the provisions of sections 106 and 106A, the fair use of a copyrighted work, including such use by reproduction in copies or phonorecords or by any other means specified by that section, for purposes such as criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, is not an infringement of copyright. In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include—

"(1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;

"(2) the nature of the copyrighted work;

"(3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and

"(4) the effect of the use upon the potential market for or value of the copyrighted work.

"The fact that a work is unpublished shall not itself bar a finding of fair use if such finding is made upon consideration of all the above factors."

Note that, despite musician's folklore, there's nothing like "up to eight notes is okay" or "up to three seconds is okay," only very general rules. Because of the vagueness, judges and juries — usually unschooled in copyright history and eager to see bad eggs punished — have frequently ruled against defendants who raise the fair use defense. As an unfortunate result, the trend in lower courts has lately been to presume that any commercial use is an infringement. This has led to a general sense that all appropriation requires payment, leading in turn to a climate of belligerence toward even the idea of using a music sample without permission and payment, no matter the circumstance. This stance wrongly confuses limited intellectual property rights with more nearly absolute physical property rights — in fact, it runs contrary to the purpose of copyright — and is inconsistent with the law as clarified by the 2 Live Crew opinion.

THE 2 LIVE CREW CASE

In 1990 Acuff-Rose Music, Inc., who control Roy Orbison's "Oh Pretty Woman," sued Luke Skyywalker (speaking of infringements . . .), his group 2 Live Crew, and their record company for copyright infringement over their parody rap version of the song, called just "Pretty Woman," on their then-quarter-million-selling album *As Clean As They Wanna Be* (1989). (The case is known as *Campbell v. Acuff-Rose* because the publisher sued using Skyywalker's given name, Luther Campbell.) Musically, the track is based on the original song's bass line, and the lyrics are a rude and raunchy take-off that begins exactly the same as Orbison's version. The group had asked permission from Acuff-Rose at the time of the release, offering to pay for the use, but were turned down. They decided to put it out anyway.

2 Live Crew persuaded the original court that as matters of law (1) their track was a parody of the older song, entitling them to claim fair use, (2) their appropriations were not excessive given "Pretty Woman's" nature as a parody, and (3) the possibility of their record harming the original's market was remote in the extreme — and so won the case without having to go through a trial. Acuff-Rose appealed, arguing that (1) the fair use defense should have been denied to the group because their record was commercial in nature and therefore must be presumed unfair, and (2) "by taking the 'heart' of the original and making it the 'heart' of a new work, 2 Live Crew had, qualitatively, taken too much" of the song. Acuff-Rose won the appeal: The original decision was reversed and the case was remanded to the original court in Tennessee.

> ***"The fair use doctrine thus 'permits [and requires] courts to avoid rigid application of the copyright statute when, on occasion, it would stifle the very creativity which that law is designed to foster.'"***
>
> ***—Stewart v. Abend, 495 U. S. 207, 236 (1990)* (Quoted in 2 Live Crew opinion)**

Frustrated with the Court of Appeals' conclusion, 2 Live Crew resorted to a petition asking the U.S. Supreme Court to decide the issue of whether it is possible for their song to be found a fair use despite its "commercial nature." The Supreme Court agreed to consider the matter, and so 2 Live Crew's case was delayed pending the decision. Now the Supreme Court has held that *"2 Live Crew's commercial parody may be a fair use within the meaning of § 107,"* reversing the Court of Appeals' decision, and has remanded the case to the trial court for an evaluation of "Pretty Woman" under the new fair use criteria set forth in the same opinion.

THE NEW POSITION ON FAIR USE

The Supreme Court took advantage of the opportunity of 2 Live Crew's petition to expound, not only on "Pretty Woman" specifically, but on the rules that govern the fair use defense generally. The Court elaborated on

HOW TO GET THE FULL TEXT OF THE OPINIONS

The reference librarian at your local public library should be able to provide you with copies of the full text of these decisions. (The Supreme Court doesn't copyright its decisions.) *Fogerty v. Fantasy, Inc.* is case No. 92-1750, decided March 1, 1994, and the 2 Live Crew case, formally *Campbell, aka Skyywalker, et al. v. Acuff-Rose Music, Inc.*, is case No. 92-1292, decided March 7, 1994. Electronically, plain text file versions of these and other important court decisions, as well as a list of pro-artist lawyers' groups in the U.S., are available on the Internet by anonymous FTP to primus.com in /pub/negativland/decisions and /pub/negativland/artlawyers.

the first paragraph of Section 107, broadening what general types of uses may be found fair; on three of the four factors, clarifying how various aspects of a use may interact to tend to render it more fair or less fair; and on how to consider a particular use's composite showing under the four factors, calling for an interpretation of the factors as a multidimensional continuum rather than as a series of pass/fail tests all or most of which must be passed. In other words, it may be possible for poor showings on some factors to be balanced by better showings on other factors. Because this case involves a song parody and that pretty much defines its relation to the original, the decision says nothing new on the second factor, "the nature of the copyrighted work."

Although the new guidelines should find more uses fair than previously, this is not a liberal court, and the opinion is in an important sense *conservative*, shaking off precedents of overprotective case law and reaffirming the primeval intent of copyright law: to encourage the creation of new, progressive works, with a refreshing and healthy acceptance of the inescapable fact that everything new is built in large part on something old. The author of the opinion, Justice Souter, is careful to note, however, that although parody obviously has to take from its object, there's still the question of how much is too much . . . and so litigated parodies, like all other alleged infringements raising the fair use defense, have to be evaluated along the four factors as they apply to the particular case.

To quote the opinion: *"[W]hile in the 'vast majority of cases . . . most infringements are simple piracy,' such cases are 'worlds apart from many of those raising reasonable contentions of fair use' where 'there may be a strong public interest in the publication of the secondary work. . . .' . . . '[I]n truth, in literature, in science and in art, there are, and can be, few, if any, things, which in an abstract sense are strictly new and original throughout. Every book in literature, science and art, borrows, and must necessarily borrow, and use much that was well known and used before. . . .' [T]he statutory examples of permissible uses provide only general guidance. The four statutory factors are to be explored and weighed together in light of copyright's purpose of promoting science and the arts. . . . The task is not to be simplified with bright-line rules, for the statute, like the doctrine it recognizes, calls for case-by-case analysis."*

Factor 1: "The purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes."

The Court had the most to say about three possible aspects of an alleged infringement: its commerciality, the degree to which it transforms what was taken, and its effect of commenting on the source.

Crucially, in answering the primary question before it the Court determined that just because a use is commercial doesn't mean it can't be fair: *"The Court of Appeals . . . erred in giving virtually dispositive weight to the commercial nature of that parody"* by misinterpreting the decision in *Sony Corp. of America v. Universal Studios, Inc.* — the famous Betamax case that legalized home VCR taping of broadcast TV shows. *"If, indeed, commerciality carried presumptive force against a finding of fairness, the presumption would swallow nearly all of the illustrative uses listed in the preamble paragraph of § 107, including news reporting, comment, criticism, teaching, scholarship, and research, since these activities 'are generally conducted for profit in this country.' . . . Congress could not have intended such a rule. . . ."* This position yields a side effect surprising to commonsense copyright notions: *"Accordingly, the mere fact that a use is educational and not for profit does not insulate it from a finding of infringement, any more than the commercial character of a use bars a finding of fairness."*

The opinion also endorsed a criterion of "transformation," which although not present in the statute has appeared sporadically in recent case law: *"[T]he first . . . factor . . . focuses on whether the new work merely supersedes the objects of the original creation, or whether and to what extent it is 'transformative,' altering the original with new expression, meaning, or message. The more transformative the new work, the less will be the significance of other factors, like commercialism, that may weigh against a finding of fair use. . . . The central purpose* [of the first factor] *. . . is to see . . . whether the new work . . . adds something new, with a further purpose or different character. . . . Although such transformative use is not absolutely necessary for a finding of fair use, . . . the goal of copyright . . . is generally furthered by the creation of transformative works. . . . [P]arody has an obvious claim to transformative value. . . ."* In a concurring opinion (which doesn't carry the force of law, as does the majority opinion), Justice Kennedy warns against insubstantially transforming the material and then claiming fair use when you get sued — a version of an existing song performed in a different musical style, for example, ordinarily wouldn't count as a fair use because the transformation is too weak.

In line with a recent lower court decision in sculptor Jeff Koons's *String of Puppies* case (Koons's exact sculptural realization of a copyrighted photograph was found to be unfair due to lack of comment and original contribution despite his intention to comment on popular taste), the Court suggests that some form of comment on the original work itself — even a raunchy comment — may be required in order to justify any taking at all: *"If . . . the commentary has no critical bearing on the substance or style of the original composition, which the alleged infringer merely uses to get attention or to avoid the drudgery in working up something fresh, the claim to fairness in borrowing from another's work diminishes accordingly (if it does not vanish), and other factors, like the extent of its commerciality, loom larger. . . . The threshold question when fair use is raised in a parody is whether a parodic character may reasonably be perceived. Whether, going beyond that,* [the] *parody is in good taste or bad taste does not and should not matter to fair use."* This last aspect departs from case law, which has sometimes denied the fair use defense on the basis of raunchiness alone.

Justice Kennedy's seperate comment stresses the commentary link at length: *"It is not enough that the parody use the original in a humorous fashion, however creative that humor may be. The parody must target the original, and not just its general style, the genre of art to which it belongs, or society as a whole (although if it targets the original, it may target those features as well). . . .* [C]*ourts should not accord fair use protection to profiteers who do no more than add a few silly words to someone else's song. . . ."*

However, Justice Souter, speaking on behalf of the full Court, seems to find more categories potentially deserving of fair use than Justice Kennedy: *"A parody that more loosely targets an original . . . may still be sufficiently aimed at an original to come within our analysis of parody. . . .* [W]*hen there is little or no risk of market substitution, whether because of the large extent of transformation of the earlier work, the new work's minimal distribution in the market, the small extent to which it borrows from an original, or other factors, taking parodic aim at an original is a less critical factor in the analysis, and looser forms of parody may be found to be fair use, as may satire with lesser justification for borrowing than would otherwise be required. . . . Satire can stand on its own two feet and so requires justification for the very act of borrowing,"* implying that such justification in terms of the other factors is in fact possible. (Satire is defined here as a work "in which prevalent follies or vices are assailed with ridicule" or "attacked through irony, derision, or wit.")

Continued on page 134

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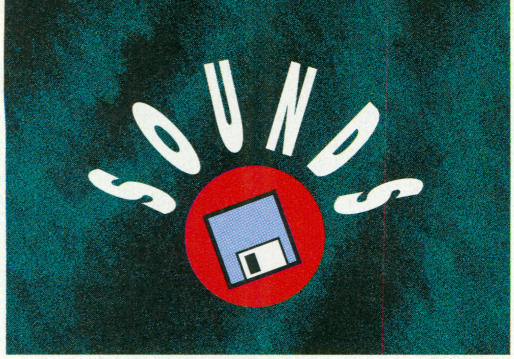

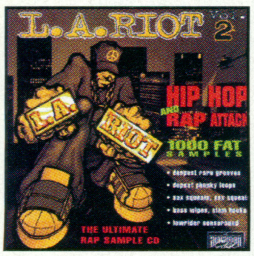

HOLLYWOOD EDGE L.A. RIOT, VOL. 2

SOUND QUALITY ★★
SELECTION ★★★★★
BANG FOR THE BUCK ★★★

Overview: Full hip-hop loops; hip-hop drum loops; tons of sax squeals, acoustic and electric bass riffs, and guitar parts; plus assorted drum-machine, vocal, and miscellaneous sounds.
Contents: 66 tracks (each track has from five to ten indexed selections).
Retail price: $99 (audio CD).
Contact: The Hollywood Edge, 7060 Hollywood Blvd., Suite 1120, Hollywood, CA 90028. (800) 292-3755.

AUDIO CD: L.A. RIOT, VOL. 2

A follow-up to Hollywood Edge's L.A. Riot Vol. 1 (see Sounds, May '94), L.A. Riot Vol. 2 has a broad collection of general hip-hop samples as well as intense sets of a few more specialized sounds. If this were the only hip-hop sampling CD you owned, it would provide a strong collection of "starter" sounds as well as a major library of certain types of samples — namely, acoustic and electric bass, sax, and guitar.

The CD, produced by Chris Lang and Eric Cunningham, is divided into several sections. Tracks 2 through 11 are "Dope Trax"; these contain over 100 built-up hip-hop loops, each followed by several select, broken-out samples from the preceding loop. Unlike the rest of the CD, these individual samples aren't organized into an easy-to-find fashion — instead, they make up a broad survey of bare drum loops, organ riffs, vocal effects, and more.

Tracks 12 through 21 contain bare-bones drum loops, just a couple of bass drums, snare, and hi-hat, plus the odd sampled explosion, scratch, or handclap. (We're told that these are collaged using live drummers and DJ scratches, plus drum machines and so on, so maybe "bare-bones" isn't quite the right way to describe them. The point is, there's enough open space in the mix for you to add your own layers.) Tempos range from 66 to 115 bpm, plus one 140 bpm loop, with the average about 90 bpm. A little more than two bars are given for each groove, making them easier to loop in your sampler, as they don't cut off too suddenly. Tracks 22 through 25 consist of more original sax squeals than you could ever want; tracks 26 through 29 contain an equally exaustive collection of acoustic bass riffs.

Tracks 30 through 33 provide a bunch of single-note synth-bass tones, all pitched at *C2*. Tracks 34 through 36 are electric bass licks. Tracks 37 through 46 are "Phunky Guitar"; most are rhythm parts played through a wah pedal, but there's also a selection of pseudo-Hendrix fuzz licks. Tracks 47 through 57 contain samples from a variety of popular drum machines, including the Roland TR-808, Linn 9000, and E-mu SP-12 and Drumulator. Tracks 58 through 62 are "cues, hooks, and slams," *i.e.*, vocal phrases. Most of these samples are of a bunch of guys standing around a mike (they're mono samples, unfortunately), loosely rapping in unison; a few of the more interesting "slams" are single rappers delivering lines in the Jamaican "toasting" style. Tracks 63 through 65 consist of (sigh) women moaning, screaming, and otherwise animatedly expressing themselves. And in a fitting closing for a collection called "L.A. Riot," the disc closes with a "Gun Control" track — ten samples of various firearms. (Peace.)

Some of the samples have better sound quality than others. While a certain amount of noise and distortion in hip-hop is, uh, hip (especially in drum loops), too many of the individual samples are noisy and cruddy, at least for our ears. To Hollywood Edge's credit, most are nicely cleaned up through gating and expansion, but noise is still noise. Furthermore, on a few of the tracks (most notably the electric bass samples), an unacceptable amount of 60Hz grounding buzz is audible. And if we may continue to bash the bass tracks, they're pretty thin-sounding — especially the acoustic bass tracks. That's too bad, because the low end on all of the drum loops and "Dope Trax" is excellent. Likewise, the Sax Squeals are recorded much better — although it would be nice if there were a few more melodic sax riffs and not quite so many atonal squawks.

If you don't own a hip-hop sampling CD, both the breadth and depth of this collection would make it a fine addition to your sampling arsenal. Bear in mind that this probably wouldn't do for dance or techno — the tempos are simply too low to get most booty-shakers out on the floor. But if you're up for some dope slammin', *L.A. Riot, Vol. 2* will certainly do the trick!

—Karl Coryat

INVISION POP & ACOUSTIC

SOUND QUALITY ★★★★
SELECTION ★★★
BANG FOR THE BUCK ★★★★

Overview: The patches show off the PCM on the card, so there's neither the variety nor the stylistic focus that we'd like to hear — but many of the sounds are strong contenders.
Contents: 2Mb PCM waveform ROM per card, 100 programs and 100 combis per disk. Waveform cards also compatible with Korg X3 and Wavestation SR.
Retail Price: $129 PCM card plus disk, $159 PCM card plus ROM program card.
Contact: InVision Interactive, 2445 Faber Pl., Suite 102, Palo Alto, CA 94303. (800) 468-5530. Fax: (415) 812-7386.

KORG 01/W: POP & ACOUSTIC PCM CARDS & PROGRAMS

A couple of years back, InVision pioneered a fresh concept in after-care for synthesizers: 4Mb of new waveforms on a board that could be retrofitted into an existing Korg M1. Evidently people liked the waves, because InVision has decided to make them available for the Korg 01/W, X3, and Wavestation SR.

We mention the history because InVision's packaging is borderline misleading. It proclaims, "Contains brand new InVision WAVES." This means that they're new to the 01/W, not new to InVision. We're told that about 90% of the material is taken from the old M1 board — and indeed, we remember the flute and the harp very well. The format is easier to deal with than on the M1, however. You can choose either a 2Mb Pop card or a 2Mb Acoustic card, and get an 01/WFD disk as well, containing programs and combis that utilize the new waves.

Let's give the raw waves a listen first, and then turn to the programs and combis. The pop card has a wider assortment, including some contemporary percussion. It starts off with a good steel-string acoustic guitar and a defiantly crunchy electric. There's a bell-like Rhodes (possibly with some FM tine sound mixed in) and a reasonable Wurlitzer. The "Slow Organ" wave doesn't have slow Leslie, it has no Leslie, but this works well with the 01/W's Leslie simulator, which speeds up realistically in response to aftertouch. While the InVision "Fast Organ" has less distortion than the internal rock organ wave, it grinds pretty convincingly, with enough multisamples that the rotor doesn't get twittery. A number of synth waves are also provided. Solid kick drums suitable for either rock or rap are included, but the rock snares are small and unconvincing; the little tappy hip-hop snares fare a lot better.

One of our reviewers felt that the voice shouting, "Hit me!" was

a complete waste of ROM. Then again, that sample is used, tuned down a couple of octaves, in a patch called "The Beast," which is one of the scariest sounds we've ever heard from a synthesizer. Just goes to show what a little creative programming will do.

The Acoustic card contains only ten multisampled waves. The acoustic guitar is fuller than the one on the Pop card, though we did notice that the bottom sample (the low *E*, *F*, and *F*♯ in the guitar's natural range) is a little sharp. The "Concert Harp" wave is marginally better than the 01/W's internal harp wave, but it isn't any more gutty than it was two years ago. The solo flute and solo violin are sampled with built-in vibrato, which makes them more realistic but less adaptable to your own expressive playing, since you can't add LFO-based vibrato to individual notes without creating some really weird beating effects. The "Bari Horn" wave has a nice bit of spit or burble in the attack, but the sustain is not harmonically engaging.

The individual program banks both start off with basic patches designed to display the new waveforms in simple but musically useful ways. Once that was out of the way, it was up to the programmers to come up with inventive variations, which had to be a challenge since (for the most part) the internal waves were studiously avoided. The result is a certain amount of repetition; how many bell-tine Rhodes patches can you come up with? Well, let's see, we can add chorus to one. . . .

Most of the really creative, hot-sounding programs on the disks are the ones that we're not supposed to know were programmed by *Keyboard* technical editor Michael Marans. Michael doesn't write reviews for this department, because he's lost his amateur standing. The industrial pulse of "Rithmdrone," the butt-kicking Wurlie (actually the "Stein Bass" wave) of "PulzBayz," the other-worldly warmth of "Digeridon't," all on the Pop disk, are Michael's explorations of the 01/W's under-utilized but difficult-to-control waveshaping feature. Also in the *trés* tasty category: the lonely Eno echoes of "StratSynth" and the delicate octave trills of "Tickle Me."

On the Acoustic disk, unusual patches like "AirIndian" and "Anethnesia" (*sic*), which respond aggressively to velocity, rub elbows with mellower offerings like the wistful, muted "BariSynth" and the simple but useful layer "Bow N Blow." The "Dulcimer" patch, which uses waveshaping on the acoustic guitar wave, has stunning audio impact, though it sounds better when you go into edit mode and cut back on the reverb. One of our listeners commented that many of the patches are "dunked in reverb." The combis lean heavily toward flute/harp layers, as you might expect, but there are also standouts like the metallic echoing "Dark Alley."

The 01/W has so much music power that it would be a shame to let it languish while you're off looping those grooves. Latch onto a few of these sounds and *play* them.

—Jim Aikin

KILLER	★★★★★
COOL	★★★★
AVERAGE	★★★
HO-HUM	★★
BOGUS	★

Q UP ARTS TRAILS & REFLECTIONS

SOUND QUALITY	★★★★★
SELECTION	★★★
BANG FOR THE BUCK	★★★★

Overview: Wet-only stereo reverb spaces of hundreds of percussion hits, sampled from the Lexicon 300.

Contents: Almost 500 percussion reverb samples, plus wet drum loops and special effects.

Retail Price: $79 (audio CD).

Contact: Q Up Arts, Box 1078, Aptos, CA 95001. (408) 688-9524. Fax (408) 662-8172.

AUDIO CD: TRAILS & REFLECTIONS

What a cool concept — 100% wet percussion reverb trails, recorded by sending various drum sounds through the Lexicon 300. No matter how limited your studio setup, if you've got a sampler your percussion can sound like it was recorded downtown. This audio CD is loaded with 82 indices; in each index, a single percussion sound is run through the Lexicon six times. The six choices are the Lexicon's Gate1, Gate2, Plate, Reverse, Room, and Stadium presets. The drums include 25 bass drums, 21 snares, 10 toms, 10 hi-hats, and various other noises. In addition, three indices provide special effects such as pitch-swoop reverbs, multiple drum hits, flanged reverbs, and reverb rhythm loops.

If you're an avant-garde type, you might want to use the samples as is, or loop one of the long ones to make a rumbling industrial bed. They're mainly intended, though, to be layered in a sampler with dry drum samples from some other source. In the eight-page insert, Q Up Arts suggests various control techniques to use in your sampler for getting more expressiveness out of the reverb samples. Choosing a wet sample that closely matches the dry sample is obviously important, as is tuning the wet and dry samples so that they match. We experimented with applying key velocity to the pitch (subtly) and amplitude of the reverb sample and to the filter cutoff of a dry snare, and found that low velocity resulted in a restrained reverb image while high velocity sounded like pounding the snare with a tire iron.

Some of the best samples are found in the Rock Bass Drum list. The low frequencies are retained, so the long samples sound like an 80-foot door slamming in the Grand Canyon. Though you might expect the output of a reverb to be just a dull roar, there's a surprising amount of variety between one drum and another. Most of the current styles of percussion are well represented, from boomy rap kicks and 808 cowbell to thundering rock snares, so it shouldn't be too hard to match the reverb sample to one of your existing drum sounds.

If you already have a decent reverb, you can sample its output using your own drum samples as an input, and get a perfect sonic match without having to buy this CD. If you're trying to squeeze maximum music out of a minimal setup, though, *Trails & Reflections* could open up an absolute treasure-house of pro ambience.

—Mark Grey & Jim Aikin

MEGABASS REMIX!

SOUND QUALITY*	★★★
SELECTION	★★★★★
BANG FOR THE BUCK	★★★★

**Some sounds and loops are noisy, but in many cases it seems intentional (and appropriate).*

Overview: Dance-oriented drum loops, solo sounds, and special effects.

Contents: Over 70 minutes of samples, categorized as slow loops (69), house loops (94), rave loops (19), drums (41), human beatbox (11), vocal phrases (113), vox shorts (79), choral vox (9), sung vox & chants (50), sex vox (13), Rolf samples (12), moon vox (7), transform & scratching (37), scene FX (11), live (23), effects (36), stabs (14), bangs (15), whooshes (25), rave sounds (56), bass & sub-bass (44), guitar (1), synths (7), analog synths (35), acid (13), organ (1), silly section (5), data section/test tone.

Retail Price: $99.95 (audio CD).

Distributor: East-West Soundwarehouse, 345 N. Maple Dr., Ste. 277, Beverly Hills, CA 90210. (800) 833-8339, (310) 858-8797. Fax. (310) 858-8795.

AUDIO CD: REMIX! HITSOUND PRODUCER SERIES, VOL. 10

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SOUNDS

Megabass Remix! isn't a "bass-only" CD. There are a handful of solo bass sounds on the disc, but the selection ranges widely from dance-oriented drum loops to synth riffs to vocal effects and much more. "Megabass" is actually the name of producer Martin Smith's company, whose credits include remixes for Madonna, C&C Music Factory, and Black Box.

Let's cut right to the chase. How *does it sound?* The majority of the house and rave drum loops, recorded in stereo, are excellent. In almost every case, four bars are provided. Some of the grooves are dry as a bone, others are generously processed. "Heavy Stomp," "Electro Taps," and "Rumbles" . . . there are far too many highlight grooves to single out here. Megabass did a great job mixing up the sounds and styles; you'll find everything from funky R&B-type rhythms (played by humans) to techno machine beats. There are even a few percussion patterns and fills that can be added to or layered with the existing loops. While one of our staffers objected to the noise present in some of loops, another thought a few could stand to be grunged up a bit. Of course, clean loops can be dirtied by resampling them through a fuzz box or a crappy speaker.

Other highlights include the "Acid" bank of analog synth riffs, and certain of the vocal groups, such as "Human Beatbox," "Vox Shorts," "Choral Vox," and "Sung Vox & Chants." We're not sure who the human beatbox is, but we like his huff-and-puff groove simulations. The Sung Vox tracks are the next best thing to hiring the Weather Girls for a soulful chorus riff. We also dug the "Moon Vox" soundbites: "We're three minutes away from loss of signal," and similar outer space radio gems.

We could have done without "Rolf Samples," a white-bread collection of phrases such as, "Say kids, what time is it? It's time for house." Too bad Megabass didn't devote this space to something more useful, like a bank of funky guitar rhythms. And the mysterious "Data" section had us scratching our heads. This digital garble, it turns out, is formatted for an Akai S1000, but you won't find that out by reading the booklet.

Data mystery aside, we think Megabass did a good job in the documentation department. The accompanying booklet gives information about each category and its contents, including BPM listings and notes from the producer. With reference to category 17, "Bangs," for instance, the producer suggests: "If you cue these Bangs on the third measure, they will smooth a link, or give it extra punch if cued on the first beat of a new sequence, an alternative to the cliched crash cymbal. Used in moderation, they'll get you out of a fix time and time again." Perhaps the only formatting weakness is the lack of separate indices within each track — it's no fun using the forward and backward search buttons to cue up individual selections.

After spending a couple of weeks with this disc, we walked away with a positive impression. If anything sets this collection apart from other dance-oriented sampler CDs, it's the variety of material offered and the cool extras such as the human beat box, the whooshes, the bangs, and the vocal hooks. We won't call *Megabass Remix!* the *ultimate* disc in its field, but it's certainly a solid, inspiring product that's well worth the $99. A follow-up from the Megabass production team is reportedly in the works.

—Greg Rule

TIME+SPACE
ZERO-G TECHNOTRANCE

SOUND QUALITY	★★★★★
SELECTION	★★★★★
BANG FOR THE BUCK	★★★★★

Overview: Tons of cutting-edge synth sounds with matching riffs, ideal for techno/dance tracks.

Contents: 40 classic rave synths, 16 special rave FX, 20 rave & hardcore basses, 80 stabs & hooks, 20 cross-fade-filtered acid tests, 69 acid test basses & bubblers, 40 techno synths & FX, 20 breakdown pads, 20 top-end tinklers, 20 early analog FX (on ARP Odyssey), 20

Continued on page 102

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4 Regions
Search Zero-Crossings
Gain
Frequency
Width
Bypass
Pan
Mute

SOUNDS

Continued from page 99

Moog basses, 30 "Juno Jam" stings, 30 "Wasp Stingers," 10 sub basses, 20 Euro-style synths, 22 house & garage pianos & organs, 15 ambient atmospheres, 10 sweeping filter synths, 20 industrial FX, 20 ethnic synths, 60 ethnic percussion, 250 effect-processed drums.

Retail Price: $99.95 (audio CD).

Distributor: Time+Space, P.O. Box 306, Berkhamsted, Herts, HP4 3EP, England. (0442) 870681, fax (0442) 877266. U.S. dist. by East-West Soundwarehouse, 345 N. Maple Dr., Ste. 277, Beverly Hills, CA 90210. (800) 833-8339, (310) 858-8797. Fax. (310) 858-8795.

AUDIO CD: TECHNOTRANCE

So clean! So danceable! So . . . European! Not a trace of street grunge mars this marvelous collection of in-your-face synth stabs and percussion. No need to spend hours layering the D-50 with the SY99 and the Proteus, just plug in a sampler and you're off to the rave.

Throughout much of the CD, you're given a short characteristic riff (typically at about 110 bpm) that uses the synth sound and is processed with some appropriate reverb or delay. Then, after a second of silence, a single unprocessed note is played. This is a good layout, for several reasons: If you're just starting out in the dance mix game, you can get some ready-made materials to throw into a track. Most anybody will get the musical intent of a sound quicker when they hear it in a musical context than if it were presented strictly as a single naked note. And if all you want is to sample the single note, the rhythmic nature of the lead-in riff will tell you when to press the record button. One of the riffs was repeated 20 or 30 times with different synth sounds, and we did get pretty tired of it after a while — but what the heck; you're the composer, not Time+Space.

Almost none of the notes on the disk are given at multiple pitches suitable for multisampling, because they aren't intended to be used in a genre where parts get played across wide ranges of the keyboard. One sample is usually all you need to sequence a riff that pumps through four or five MIDI notes over and over. (Speaking of multisampling, we're told that an Akai-format CD-ROM version of the disk is going to be available soon.)

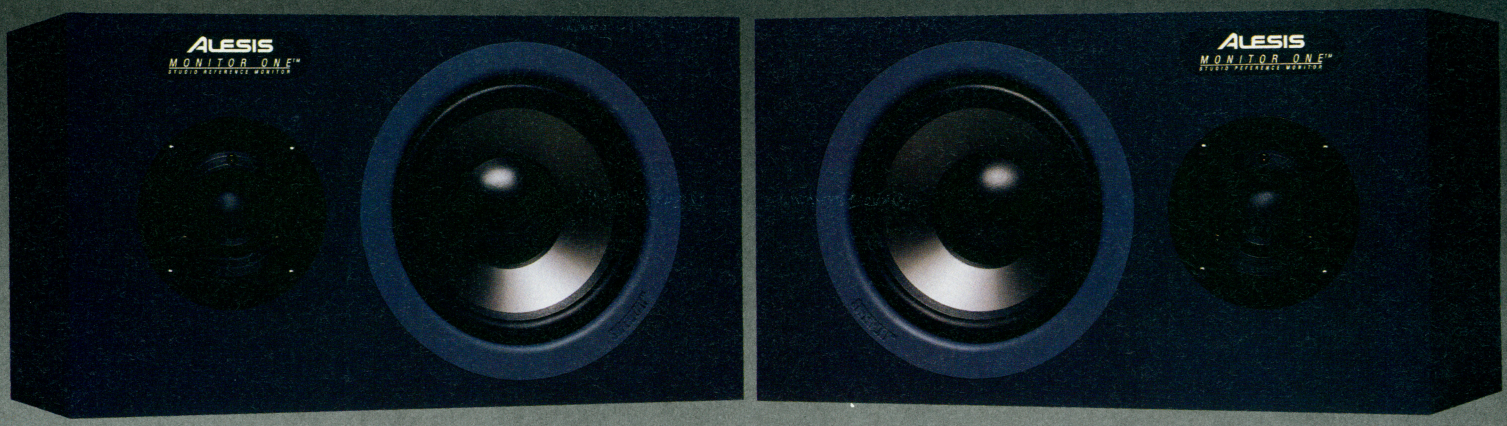
Analog filter effects that move across a phrase are a big feature in techno, but if you don't have the right equipment they're tough to program. *Technotrance* does its best to fill the gap with a selection of 20 "crossfade" filter sweeps. You're given, first, a rhythmic phrase that contains a real filter sweep, followed by four individual notes, otherwise identical, in which the filter is at various levels. Sequencing these four notes in various orders won't create an illusion that will fool attentive listeners, but it will get you close to the musical result.

It's all here — minor chord stabs with sharp attacks and breathy highs, death drones with filter sweeps, big round Moog basses, tweezy twitters on an unstable ARP Odyssey, swirling atmospheric tones, rude processed percussion, the original Emulator shakuhachi . . . heck, there's even a selection of short single notes on piano (one note per octave for five octaves), organ, sax, and electric bass, so if your only music source is a sampler and this CD, you can get up and groovin'. Some of the sustained chords and notes in the "breakdown pads" section display very audible looping artifacts of the pop-and-thud variety, but this may be appropriate to the style. Think of it as digital grunge.

One of our listeners did note the absence of a nice solid kick drum suitable for a basic four-on-the-floor pounding rhythm. Also absent are funk elements like scratches and wah-wah guitar fragments. *Technotrance* is definitely *not* a hip-hop collection.

With materials like this CD as a starting point, it's never been easier to program stellar dance tracks. Almost makes you wonder what the creative elite will be forced to come up with next, so they can stay ahead of the pack.

—Jim Aikin

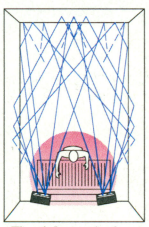


The Truth From Left To Right

The truth...you can't expect to find it everywhere you look, or *listen*. But when mixing music, hearing the truth from your monitors will make the difference between success and failure. You'll get the truth from the **Alesis Monitor One™ Studio Reference Monitor**.

Room For Improvement

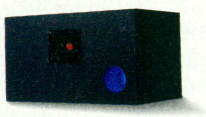
Fact: most real-world mixing rooms have severe acoustical defects, with parallel walls, floors and ceilings that reflect sound in every direction. These reflections can mislead you, making it impossible to create a mix that translates to other playback systems. But in the near field, reverberant sound waves have little impact, as shown in the illustration. The Monitor One takes advantage of this fact and is built from the ground up specifically for near field reference monitoring.



The pink area in the illustration shows where direct sound energy overpowers reflected waves in a typical mixing room. The Monitor One helps eliminate such complex acoustic problems by focusing direct sound energy toward the mixing position.

The Truth From Top To Bottom

The Monitor One's proprietary soft-dome pure silk tweeter design delivers natural, incredibly accurate frequency response while avoiding high frequency stridency and listener fatigue–typical of metal-dome tweeter designs. The Monitor One overcomes wimpy, inaccurate bass response–the sad truth about most small speakers–with our exclusive SuperPort™ speaker venting technology. The design formula of the SuperPort eliminates the choking effect of small diameter ports, typical in other speakers, enabling the Monitor One to deliver incomparable low frequency transient response in spite of its size.



Alesis SuperPort™ technology gives you the one thing that other small monitors can't: incredibly accurate bass transient response. No, the SuperPort doesn't have a blue light, but it makes the picture look cool.

The result? A fully integrated speaker *system* that has no competition in its class. You'll get mixes that sound punchier and translate better no matter what speakers are used for playback. The Monitor One's top-to-bottom design philosophy is a true breakthrough for the serious recording engineer.

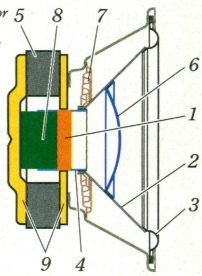
Power To The People

While most near field monitors average around 60 watt capability, the Monitor One handles 120 watts of continuous program and 200 watt peaks...over twice the power. The Monitor One provides higher output, more power handling capability, and sounds cleaner at high sound pressure levels. If you like to mix loud, you can.

The Engine

Our proprietary 6.5" low frequency driver has a special mineral-filled polypropylene cone for stability and a 1.5" voice coil wound on a high-temperature Kapton former, ensuring your woofer's longevity. Our highly durable 1" diameter high frequency driver is ferrofluid cooled. Combined, these two specially formulated drivers deliver an unhyped frequency response from 45 Hz to 18 kHz, ±3 dB. The five-way binding posts provide solid connection, both electronic and mechanical. We even coated the Monitor One with a rubber textured laminate so when your studio starts rockin', the speakers stay put. Plus, it's fun to touch.

A cross section of the Monitor One's proprietary Alesis-designed 6.5" low frequency driver.



1. *1.5" voice coil.*
2. *Mineral-filled polypropylene cone.*
3. *Damped linear rubber surround.*
4. *Kapton former.*
5. *Ceramic magnet.*
6. *Dust cap.*
7. *Spider.*
8. *Pole piece.*
9. *Front and back plates.*

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ALESIS
STUDIO ELECTRONICS

YAMAHA VL1 VIRTUAL ACOUSTIC SYNTHESIZER

PHYSICAL MODELING SYNTHESIZER

By Ernie Rideout

YAMAHA'S VL1 IS THE FIRST COMMERCIALLY available synthesizer incorporating physical modeling synthesis, a technology detailed in the Feb. '94 issue of *Keyboard*. Though a summary of the theory behind this technology is beyond the scope of this review, here's what makes the VL1 tick, in a nutshell: Instead of using samples or oscillators, it uses tremendous digital signal processing power to create sounds in real time based on complex mathematical descriptions (instrument models) of how acoustic instruments work. It doesn't do it all on its own, though. It requires human input, and lots of it.

You *do* put a lot into playing the VL1, but what you get out of it may seem sparse, at first: a maximum of two simultaneous tones, utilizing two voices maximum. Here among our racks of multitimbral *wunder*synths, the notion of dropping nearly five Gs for an additional two voices seems patently ludicrous.

But only until you hear the VL1. Better we should ask just what can be done with those two voices. The answer: It all depends on the player, and how much that person is willing to put into learning how to play the instrument. Although it looks like synths that we've played before (49 keys, three wheels? Big deal), and uses familiar controllers (Breath controller? That's as retro as a DX7!), the ways in which the player and controllers interact to affect the sound is unlike anything we've ever experienced.

The VL1 contains a single instrument model that is optimized for creating wind instrument patches. Although there are a range of plucked and bowed string patches as well, using the breath controller is hands down the best tool for emulating envelopes and articulations. Far beyond that, however, is the sensation one has of breathing life into the instrument, and of the sound emanating from inside one's chest, no matter what the instrument model. This feeling is not engendered solely from the use of the breath controller; it's a result of the dynamic interaction among the many controller parameters, and from the distinct awareness that you are not merely triggering a sample. The breath controller is not a requirement, though. Any controller parameter can be routed to the footpedal or other assignable controller as well, but the feeling of control and intimacy is not the same.

The VL1 is the first affordable manifestation of physical modeling synthesis technology. In some ways, the configuration of the VL1 parallels that of Yamaha's GS1, the predecessor to the DX7, which had limited user programming and was prohibitively expensive. We may or may not see more affordable versions of the VL1 in the future, but it's important to keep this in mind as we examine how Yamaha has implemented physical modeling, and the decisions they've made about how much control to leave in the hands (and mouths) of players.

Overview. Derived from the VL1's basic model are 128 instrument patches, some based on familiar acoustic instruments and some *syncoustic* hybrids (to use Yamaha's term) that have never existed before. Each instrument consists of two basic parts: a *driver*, which excites the model, and a *resonator*, which amplifies and sustains the "virtual vibrations" as well as determining pitch and timbre. A driver can be a reed-and-mouthpiece, lips-and-mouthpiece, or bow-and-string model. Resonators can be tubes or cavities of varying lengths, diameters, and materials. Right away, you can see the incredible potential of the system: Since none of these models exist physically, it's possible to have a flute mouthpiece playing a string, or a bow driving a tube of brass. This is basically what's *virtual* about the VL1. The instruments you hear don't exist, but they sure sound as if they do.

The individual instruments are made available to the user as *elements*. Each element is a configuration that includes an *instrument*, the *controller sources* that determine how it plays, and the *modifiers* that affect its timbre. Elements can be used singly or combined with one other element to create a *voice*, which is the term Yamaha prefers over patch. Not to be confused with polyphonic voices, of which there are but two.

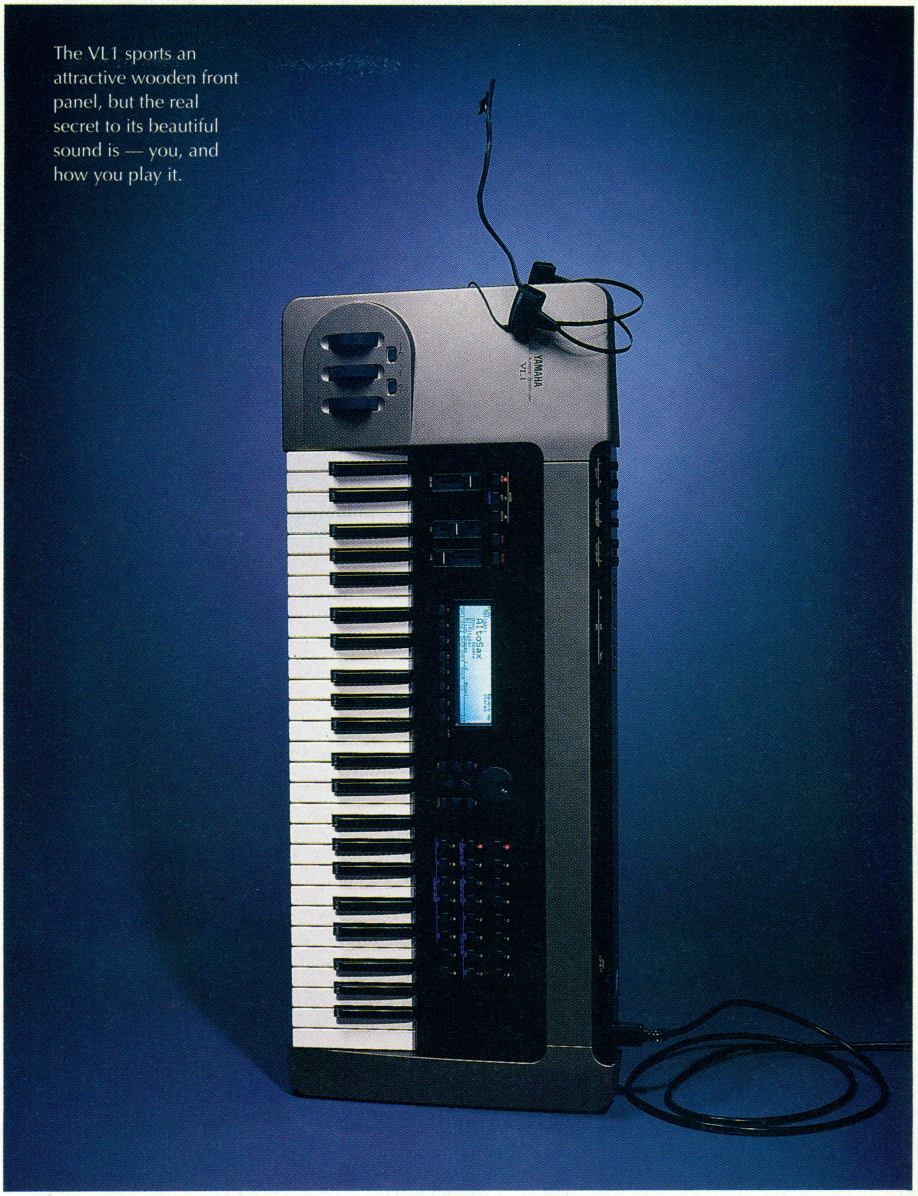
Each element has three output signals. The driver signal is the output of the mouthpiece

PROS & CONS

Pros: Phenomenal real-time, interactive control. Superb acoustic instrument and electric guitar emulations. Excellent effects.
Cons: Expensive. No user access to basic instrument model. No user alternate temperaments.
Bottom Line: Playing the VL1 feels like playing a musical instrument.

YAMAHA VL1 VIRTUAL ACOUSTIC SYNTHESIZER

Description: Synthesizer.
Synthesis method: Physical Modeling.
Keyboard: 49-key, synthesizer action, *C* to *C*. Velocity, channel pressure sensing.
Memory: 128 voices in battery-backed RAM.
Voice Architecture: Duophonic with independently programmable elements. Each voice can be controlled using any or all of 12 controller parameters: pressure, embouchure, pitch, vibrato, tonguing, amplitude, scream, breath noise, growl, throat formant, damping, absorption, plus real-time control of harmonic enhancer and dynamic filter. Programmable envelopes for pressure, embouchure/pitch, vibrato, growl, and amplitude/filter. Additional instrument voices available on 3.5" floppy disks.
Features: Two programmable mod wheels, two programmable sliders, pitch-bend wheel. Effects include flanger, pitch shift, distortion, three delays, eight reverbs. Five-band EQ. Edit-recall command. BC2 Breath Controller and FC7 Foot Controller included.
Interfacing: Two footswitch ins, two programmable footpedal ins, breath controller in, 1/4" L/R stereo outs, 1/4" stereo headphone out. MIDI in/out/thru. 3.5" floppy disk drive.
Dimensions: 36" x 15" x 4-1/8". 27.5 lbs.
Suggested Retail Price: $4,995.
Contact: Yamaha Corporation of America, 6600 Orangethorpe Ave., Buena Park, CA 90620. (714) 522-9011. Fax (714) 522-9301.



The VL1 sports an attractive wooden front panel, but the real secret to its beautiful sound is — you, and how you play it.

or bow-and-string contact point, without any of the resonating characteristics of the instrument's body. The pipe/string output is the main output. The tap output selects a point along the instrument's pipe or string to "tap" into. These are the three basic building blocks of a sound's harmonic structure to which the user has access.

128 voices ship in the VL1's RAM. A backup set is provided on floppy disk, along with an alternate set of the same voices with different controller capabilities. According to Yamaha, more instrument voices will be available for sale in the near future on floppy disk. Each bank of 16 voices will retail for $129.00.

You can create your own voices by copying elements, functions, or parameters from other voices, or just by tweaking an existing voice. New voices must be saved to a memory location before they can be saved to a disk, so it's not merely as a courtesy that Yamaha includes the factory backup disk, since the save procedure wipes out the resident voice.

The eight bank buttons and sixteen program buttons make the VL1 seem like a regular preset synthesizer. Most of the voices make no sound whatever if you just play them from the keyboard, though, and this is where you begin to realize that you may not be in Kansas anymore. Time to hook up that BC2 breath controller, which is supplied with the VL1, and expire.

No, we don't mean kick the bucket, although if you haven't had much breath controller or wind instrument experience before, your face and abdominal region may want to die after the first hour or so. Your embouchure (the musculature around the mouth) and diaphragm (the muscles responsible for drawing and expelling breath) definitely get a workout using the BC2. If you get carried away, you may end up biting the mouthpiece with undue force, hastening fatigue around your lips. Using your diaphragm is critical, as a steady stream of air is the key to a consistent tone, just as with acoustic wind instruments. As we'll see in our discussion of the voices, though, an inconsistent tone can be highly expressive, as long as you're in control of it.

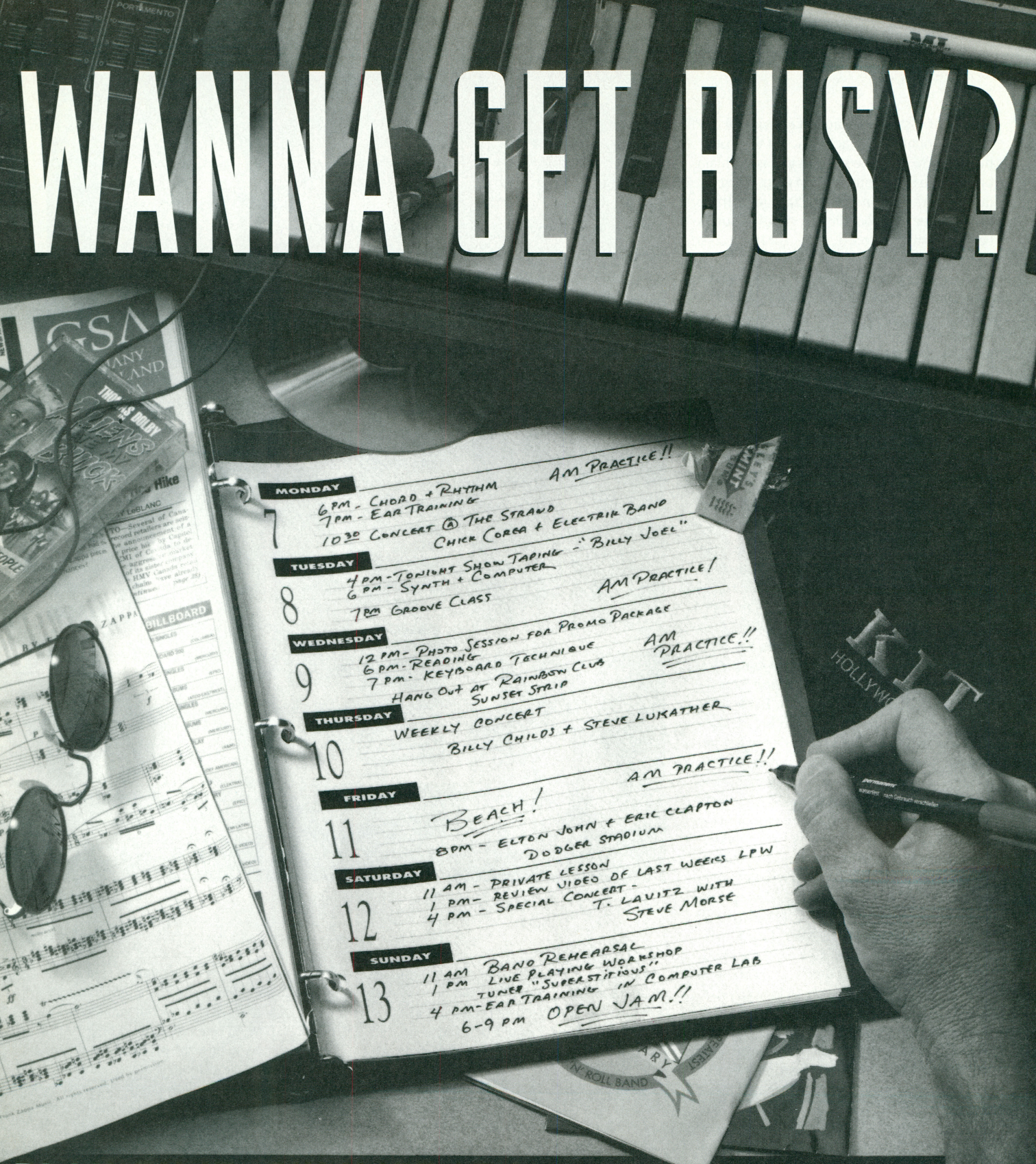
Your ego may take a beating, too, if having an unmolested coiffure is a concern. You wear the BC2 on your head, like headphones that don't quite reach your ears. If its appearance is offensive, cover your dome with a baseball cap. (Now, *there's* a "wearables" marketing opportunity for someone.) The BC2 plugs into the front of the VL1, and although the cord length is generous, be sure to remove it before diving off the stage into the mosh pit. To wear the BC2 and headphones at the same time, clip the BC2 onto the back of your neck, or under your chin. We didn't say *you* were going to be beautiful; just your sound.

Playing a note on the keyboard while blowing into the BC2 is the basic VL1 technique. In addition, other controllers can be routed to a number of controller parameters. The VL1 also comes with the FC7 Foot Controller, which in its default mode and plugged into the Foot Controller 2 jack on the back panel, duplicates the effect of the breath controller. As we said earlier, most wind and bowed sounds rely on very fine control for their expressive sound, so by and large your foot won't cut it. Re-assigning the footpedal to another controller destination such as scream will make it into a useful ally.

Then there are the wheels and sliders. The pitch wheel is normally routed to the VL1's intriguing pitch change parameters. The default assignment of the two mod wheels is often to vibrato and a timbral control of some sort. The two control sliders are usually assigned to reverb time or delay time, or to element level in a two-element voice. There's also another foot controller jack, and two footswitch jacks to boot. You don't have to be an octopus to operate the dang thing, as you have the option of developing a set of controller routings that works for you. Playing the VL1 is definitely a multi-limb event, though, calling for coordination and facility not unlike that required of kit drummers.

Any of these physical controllers can be assigned to the controller parameters, which actually affect the model to produce and alter sound. A quick perusal of just the parameter names will give you a hint of the new territory the VL1 is charting: throat, pressure, breath pressure, growl, embouchure, tonguing, pitch, scream, damping, and absorption. The degree of control these parameters provide depends

PHOTO: PAUL HAGGARD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8
7PM GROOVE CLASS
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9
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8PM - ELTON JOHN + ERIC CLAPTON
DODGER STADIUM
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11 AM - PRIVATE LESSON
1 PM - REVIEW VIDEO OF LAST WEEKS LPW
4 PM - SPECIAL CONCERT -
12
T. LAVITZ WITH
STEVE MORSE
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on the instrument being modeled in a particular voice. Not all parameters have significant influence over all voices, and you can certainly choose not to utilize even the ones that do, if your interpretation of a particular voice so dictates. Some controller parameters, pressure in particular, are at the core of how the model produces sound, and therefore you can't alter how they affect the model.

It is here that we come across both the VL1's greatest strength and its severest limitation. As you will see, the VL1 holds more potential for individual expression than perhaps any other electronic instrument to date. This is due not only to the sheer abundance of programming parameters, but more importantly to the integral nature of the performer's physical input. No two people are going to sound identical on this axe, even if they don't tweeze a thing.

On the other hand, you can't just create any instrument you can imagine. You are limited to recombining and adjusting what is already there. Yamaha has made the adventurous decisions already, and given the vast promise of this technology, this is frustrating if for no other reason than having had our naive desire to mold clay with our own hands thwarted.

Realistically speaking, we may think we're frustrated, but that's nothing compared to figuring out why the slide clarinet with the ten-foot bore and bowed quadruple reed we spent hours programming makes no more sound than water evaporating. The nature of physical modeling is based on physical properties, and there are simply points past which a model wouldn't make sound if it were real, either. It would be very easy for those uninitiated in the laws of physics to tweak a model beyond feasibility. As we understand it, it's taken the talented VL1 sound designers a great deal of time and effort to create voices that just work, much less sound great. In all fairness, there's already plenty of opportunity to come up with controller levels that will either produce no sound at all, or unacceptable amounts of chaos. Perhaps, though, future incarnations of this technology will give

ETHNO-TECHNO: THE VL1 AND VIRTUAL WORLD MUSIC

Those of you with an ear for the ethnic, rejoice! With the VL1, you can play a wide variety of ethnic instruments, and achieve stylistic and technical realism that was formerly approachable only with the real McCoy. Yamaha's sound designers have provided carefully-considered voices of several Asian instruments that lay the possibility of accurate realization at your feet, or fingers, or lips. On most so-called ethnic sample collections available on disk, CD-ROM, and even in ROM of certain sample-playback synthesizers, little thought has been given to the context in which the instruments are played, so the user is left with a random lifeless sample of a fuzzy-sounding instrument from somewhere, with absolutely no guidance or clue as to how the instrument can be brought to life. The choices made about which instruments to include in these collections reveal a lack of familiarity with the dazzling spectrum of the world of music and the manifold cultures in which it occurs. The alternative up until now has been to collect the actual instruments and learn to play them yourself, unless you could afford to collect the players as well. The trouble with this approach is that you either have to keep dusting the instruments or feeding the players.

Playing the VL1's "Kokyu" voice, on the other hand, is a joy. In real life, the Japanese kokyu is a bowed string instrument which is held vertically. The resonator is a small cylinder, one end of which is covered with skin, usually snakeskin. The strings pass directly from the tuning pegs to the bridge, and the player has no fingerboard to guide placement. You finger the strings in the open air as you bow. The sound of the instrument is distinctive — long, voluptuous slides and ample vibrato abound. On the VL1, portamento time is assigned to the C1 slider, and it overrides vibrato. To get that stylin' kokyu sound, push the slider all the way up for a long, slow slide, then when you get to your destination, pull it back, revealing a luxuriant vibrato.

Another smashing success is a voice called "Thai reed." This is the pi nai, a quadruple-reed instrument known for its raucous tone, circular-breathing techniques, and chuffy vibrato. The actual instrument is not only difficult to play but hazardous: When you inhale, you run the risk of swallowing the reed. Fortunately, the reed has a few inches of string attached for pulling it out of the player's gullet. Not only does the VL1 eliminate this hazard, but it puts all of the tools for accurately mimicking this little-known but fascinating instrument in your, uh, mouth. This voice has embouchure, damping, and pitch routed to the pitch wheel, so executing a characteristic pi nai scoop really gets the tonal variation the instrument is capable of. The vibrato is wide, too, and there's plenty of breath noise. It's a treat.

Unfortunately, the only factory voice on the VL1 that bites falls into the ethnic category as well. The original instrument for this voice, too, comes from Thailand; it's a mouth organ called the khaen (pronounced *can*). The real instrument uses metal reeds like a harmonica, and is played polyphonically, usually with two drone notes. Its sound is very pretty. The VL1's "Khaen," however, sounds more like a hurdy-gurdy played with a chainsaw that has a few teeth missing. It's not even close, and it's a shame that it bears the same name as the original. Lose the patch, guys.

Another ethnically-related gripe is that the VL1 has no provision for user-defined alternate tunings. Besides the usual historical temperaments, there is a tuning that's shifted 1/4 tone, as well as one that turns all intervals to 1/4 tones and one that turns them into 1/8 tone intervals. But to create a particular ethnic tuning, you must program it on a Yamaha SY99 or SY77, and then send it to the VL1 via sys-ex. Once that's done, the VL1 will save the tuning as part of the voice. You could also program your own sys-ex dump with your sequencer.

us a modicum of input as to how the instrument models are constructed, like the DX7 brought algorithms within user's grasp after the GS1 introduced them.

But we digress. The user does have a great deal of control over the harmonic content of a sound in the *modifier* section. Here we find a harmonic enhancer, a dynamic filter, a five-band parametric EQ, and two modifiers that work in conjunction with one another — Yamaha calls them the impulse expander and the resonator. The harmonic enhancer and dynamic filter are controllable in real time.

A significant aspect of the realism of a sound is how you perceive its environment. The VL1's effects section provides plenty of ambience control, from reverb and delay to different amplifier and speaker emulations. Many effects parameters are assignable to real-time control.

Scream? Throat? Absorption? Where did these controller parameters come from, *Psycho*? Actually, they're all aspects of the science of acoustics, and though we'll spare you the math, let's take a closer look at the control they give you over the sound of your virtual instruments.

Controller Parameters. As you may recall, the VL1's controller parameters affect how the model creates sound according to the values you send to them with physical controllers such as the breath controller, footpedals, wheels, and so forth. You can specify which parameter or parameters a given physical control affects. How much a controller affects a parameter can be determined with the depth setting. You can also set a curve that makes a parameter respond faster or slower as the value increases. In essence, you have a lot of input as to how the VL1 responds to your physical actions.

The major limitation seems to be that you can't set separate physical controllers to affect a single controller parameter. This would be nice for controlling embouchure and vibrato with aftertouch to create lip trills in a trumpet, while controlling vibrato with a mod wheel as well to add vibrato to the straight tone. It's possible to have two assignable controllers set to the same MIDI continuous controller number, but that will duplicate all controller parameter assignments for that continuous controller. The default setting of the footpedal, for example, is breath controller, the same as the BC2, but the two are not intended for simultaneous use.

Pressure translates in the instrument model to the breath pressure you'd apply to a reed or the speed of a bow across a string. This parameter is perhaps the closest to the model itself, and you don't have the option of setting its parameters, other than envelope time offset. Your own breath pressure creates the shape of the envelope, though, so in that regard, how much more control would you ever need? Pressure affects the timbre of the sound, as well as volume and, in some voices, pitch. As on a wind instrument, if you let up with your breath pressure, the pitch may drop a bit, depending on the instrument. Full breath pressure can make a voice sound full and well-supported, just like on a real acoustic instrument. It makes a string voice sound louder or softer.

Adjustments in the *embouchure* controller affect how the instrument model sets the tightness of lips around a reed, or of lips pressed together, or the pressure of a bow on a string. This can affect pitch and timbre of a sound. In a flute voice, it directs and focuses the airstream, which can change the sound from a dull unfocused sound to a centered one, and even overblow to an overtone. With a brass instrument, you actually hear lips slurring from one overtone to another as you change the embouchure value. As it is integral to the sound-producing capability of a voice, you have control mostly of the value of this parameter, and not of its attributes, such as which overtone a brass sound starts on. Note that the BC2 itself doesn't respond to changes in *your* embouchure, so gnawing on its mouthpiece won't change the sound.

Pitch on the VL1 works differently than on a PCM synth. Changing this value actually changes the length of the pipe or string in the

model. Therefore, what you're hearing as you go up and down the keyboard is not one sound being shifted, but a new sound with adjusted values for the new dimensions, with constant formants remaining unchanged. It is the transposition of these formants that creates "munchkinization" in PCM synths and samplers. The result is that VL1 voices are as consistent going from one note to the next as their acoustic counterparts are.

Vibrato can be applied via pitch or embouchure, so you can get some outrageously realistic effects. On a tenor sax patch, for example, you can blow, add vibrato, and gradually lose breath pressure until you're left with just the sound of air passing through the horn, but with a vibrato, *à la* Ben Webster.

The sound of air passing through a horn is an inherent part of a particular voice's behavior, and you can refine it with a controller parameter called *breath noise*. Far from merely interjecting noise into the system, this parameter generates noise based on such factors as the distance between the reed and mouthpiece. You can adjust the tone of the noise with high- and lowpass filters to match your concept of the particular instrument.

Amplitude varies the volume of a voice, but not the timbre, and you do have control over a programmable envelope here. Adjustments made to amplitude parameters override the pressure envelope, and in some voices this gives you a fair amount of control over the instrument's attack behavior.

Growl will yield flutter tongue, trumpet growl, or a range of unearthly effects. It affects pressure and/or breath noise, and creates an oscillating effect that you can set to its own rate, sync with the vibrato rate, or set to random.

Three of the controller parameters have fairly instrument-specific purposes, yet can yield wonderfully unpredictable results. *Throat formant* provides an effect like multiphonics on a saxophone, for a Roland Kirk-type effect on a sax voice. It also can have a marked affect on the timbre of any sound, much as the oral cavity and throat dimension of a player affects the tone of an acoustic instrument. *Tonguing* affects the attack of a note, simulating a half-tongue on a reed. *Scream* puts a little chaos into the system, creating some very wild effects. With unique controls like this, you can easily create sounds that you don't want to listen to; but, used judiciously, they can be very effective.

Damping and *absorption* emulate the effect of waves being reflected at the bell of a horn, or high-frequency loss at the end of a string. They mimic the physical properties of what goes on at the end of an instrument, either at the end of a string or at the end of the air column. The result can be subtle, as a trumpet sounding just a little muffled, then brightening up as you blow harder. Or the effect can be bombastic, as in the "Guitar Hero" voice, which emulates vacuum tubes distorting the sound as their signal is overdriven.

Modifiers. The five functions in the modifier section provide a great deal of control over the harmonic content of a sound. The dynamic filter gives you a choice of lowpass, bandpass, highpass, and band-elimination options. Lowpass and highpass have a cutoff slope of 12dB/octave. The filter has an input level and wet/dry balance. Cutoff tracking can be fixed or follow the keyboard. A resonance parameter produces a peak at the filter's cutoff frequency. Routed to breath controller, the filter produces sweeping effects depending on your breath pressure.

The harmonic enhancer has a carrier and modulator block, and is used to emphasize harmonic content that is musically effective, but that may not be sufficiently present in the model. For its input signal, the enhancer can use the instrument sound, breath noise, the friction between the reed and mouthpiece, or the reed alone. You can set keyboard scaling for highpass filter, overdrive, carrier level, modulator index, and balance.

After the filter, the signal passes through a very flexible parametric equalizer section. The equalizer features an adjustable highpass frequency cutoff and lowpass frequency cutoff, and five bands of EQ, with Q adjustable in approx-

YAMAHA VL1

imately whole-step increments up to a width of approximately five octaves.

The impulse expander and resonator resemble a specialized reverb in that they create a certain type of ambience that makes metallic-sounding instruments a little more realistic. The resonator has five parallel delays with delay times of up to 41.54ms, as well as settings for density and dispersion. The effect can simulate the resonant space inside an instrument .

Sounds. So how does the VL1 sound? That depends on how skillfully it's played, what the performer is trying to accomplish, and, most importantly, the stylistic intent of the instrument being modeled. If the goal is a realistic performance on an acoustic instrument, then playing that voice in an uncharacteristic manner will yield an unconvincing result. If chaotic rumblings and squeaks are what you're after, then the absence of characteristic trills, portamento, or vibrato is moot.

Each voice has been designed with a stylistic focus, although most sound very good in a variety of contexts. In the case of the voice named "Trumpet," trad jazz, big band, and other ebullient styles can be executed convincingly. Achieving a credible classical tone, on the other hand, is not likely, even with all of the tonal manipulation available. Part of the task ahead for the prospective VL1 player is to determine what styles sound best with each voice, and then master playing techniques that give the best impression of those styles.

In this regard, our first impression of the "Viol Inn" voice was not good. The vibrato seemed too wide, and the speed was not variable. Lightening up on the breath pressure produced a very thin sound. Mozart was about to rise from the grave to put an end to our interpretation of one of his sonatas, when we put a Jazz Hot spin on it, and *vòila*! Instant Stephane Grappelli. Light, quick scoops into the high point of a phrase and vibrato that dies away quickly were two tricks that made our jazz violin sizzle. We promptly revised our original opinion.

The other string voices seemed to fall into their own niches as well. "Fiddler" can do great Paganini-style tremolo runs and trills. "Eleanor" has a warm cello sound, as long as you keep up the breath support. "Contraire" and "Double Bow" both have enormous contrabass tone, and the bowing is convincing on slow lines. "Monteverdi" has a light viol tone that's great for renaissance and baroque music. On the other hand, "Upright" is intended for jazz, but its sound is insipid; left untweaked, it probably couldn't walk its way out of a paper bag. Overall, the VL1's pressure envelope really gives a convincing sensation of bow speed on all string voices.

Violin can be found in the example bank on the accompanying floppy disk, and since it's the only violin voice that's programmed for double-stops, it brings up an interesting point about the VL1's voice structure. This voice is in single-element poly mode, which means that it uses one element to produce its two polyphonic voices. Part of the charm of double stops, though, is being able to bend one note while holding the other steady, often on an open string. Although the manual doesn't detail this technique, we switched the voice to dual-element unison mode and routed the second element's pitch to aftertouch. Then when we used the pitch wheel, only the lower voice bent. A similar approach can be used to give two-element wind voices separate vibrato control.

Speaking of winds: With a minimum of EQing, we were able to set up the various woodwind voices to the point that we were thinking of perhaps taking some symphonic auditions. Embouchure control on these voices produces very convincing results. As you change the embouchure on "CFlute," it ranges from an unfocused sound that drops in pitch, to a centered tone, to an overblown octave. With the double reeds, it sounds just as if you're letting up on lip pressure or constricting the reed. The clarinet will even squeak on the throat tones, if you overblow it a bit.

The saxophones are, quite simply, awesome. With a combination of pitch, embouchure, breath noise, growl, and vibrato, we were able to resurrect Ben Webster, Dexter Gordon, Stan Getz, Cannonball Adderly, John Coltrane, and Sonny Stitt. The tenors are the most convincing, but all children in this family are remarkably well-behaved.

Our first experience with a brass voice harkened back to our first days in grade-school band. Assigned to the pitch wheel, embouchure produces a continuous sound as it slowly, painfully, lips from one harmonic to the next. Just like in fifth grade, with practice we were able to make some more advanced sounds. The brass voices all respond to double- and triple-tonguing, as well as to legato. In general, they are all bright, too much so for symphonic emulation, but fine for jazz and pop styles.

The VL1 has more than a few voices of instruments that you won't see down at the music store. Known as *syncoustic* instruments among the Yamaha VL1 team, their names alone are titillating: "PipeBowBow," "Viowind," "ClariLip." Whether these sound just like you'd think such a combination would sound is up to your imagination, but they are certainly interesting. Many stranger sounds reside in the VL1, as well. Some, like "Moby" or "Jurassic," have musical potential as well as sound effect applications.

Effects. Finally, each VL1 instrument has a 32-bit multi-effects device at its disposal. There are three stages — modulation, delay, and reverb. The modulation section includes flanger, pitch change, and distortion. The delay section includes mono, stereo, and three-channel with a center delay, and delay times up to 1024ms. A handy time calculation feature lets you figure the delay time for a variety of

rhythmic values needed based on BPM. Reverbs include two halls, two rooms, studio, plate, space, and reverse.

Effect levels can be controlled in real time, as can flanger frequency, pitch change wet/dry mix, distortion presence, delay feedback, delay send level, and reverb send level. You can route any of these to any physical controller or MIDI controller.

The flanger can use any of three waves: triangle, sine, or random. There are settings for depth, frequency, delay, phase, and feedback gain. Still sounds a bit cold? Kick in the analog feel parameter, as it warms up the sound quite a bit.

The pitch change effect can set different changes for each element. Routing it to breath controller to bring one voice up and the other down, you can get a trumpet and sax combo to create subtle intonation variations, just like you'd hear at the Blue Note.

There's an interesting selection of distortion "devices": transistor amp, tube amp, two stomp box distortion types, and a fuzz type of distortion. Then you've got a choice of speaker types. Flat is like a direct feed into the board. *Stack, combo, and twin* emulate various speaker configurations. Comic relief is provided by the radio and megaphone settings, which do a great job of emulating their namesakes. Although you may not feel an immediate need for the latter two, they could come in mighty handy for film work.

Each reverb type has four slight variations, as well as settings for initial delay, diffusion, bass, and treble. An interesting feature, time boost, lets you extend the reverb tail.

Editing. For all the controllers, parameters, and modifiers that you have to keep track of, getting around on the VL1 is no big deal. Once you've learned the signal flow and the general location of parameters among the software pages, you can find what you need pretty fast. Push the edit button, select the element with the function buttons, select controllers, modifiers, or envelopes, and you're practically there. Once you're in the parameter editing pages, you scroll back and forth between the pages of parameters with back and forward buttons.

Just because it's easy to tweak doesn't mean that it will always be easy to get the sound you want, though. The interaction of the controllers and the instrument model is complex, and unless you've got a degree in acoustics, the results of big changes may surprise you. Even physicists may find themselves stroking their beards in wonderment at times. Give yourself time to figure out what works and what doesn't.

The copy function is great, as you can copy an element (or any number of its parameters and attributes) to a new voice. You can even copy physical controller routings, although you'll want to adjust the depth and curve settings to suit the new voice.

The biggest inconvenience is with controller assignments. Controller parameters are paired with their physical controllers on the parameter edit pages, and a search and replace feature lets you scroll through and see what the current assignments are and reassign things to an extent. The assignable controllers meet their MIDI controller data partners in the system pages, however, and although that makes sense in that those are global assignments, it would have been nice to be able to zip right to that page from the parameter assignment pages.

The introductory manual provides a succinct description of physical modeling as it relates to the VL1, a good overview of the operations, an introduction to tweaking sounds, and some amusing illustrations. The feature reference manual shows you where everything is and, in spite of the numerous typos, it does this well. The sounds are described in detail and their controller routings are revealed in the voice list. Don't expect too much programming guidance, though. You're pretty much on your own.

MIDI Control. The VL1 does indeed send MIDI on all of its numerous controllers, over a single channel. We recorded a VL1 performance into Steinberg/Jones' Cubase running on a Mac Quadra 650, and, although we were flailing on all controllers, all controller data recorded flawlessly. On playback, we found that not only can the VL1 dish it out, but it can take it, too. The control sliders send system-

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MACKIE 8-BUS

24-CHANNEL MIXING CONSOLE

By Mark Vail

KEYBOARD REPORT

WAXING NOSTALGIC ONCE AGAIN: Back in the mid-'70s, many musicians favored mixers that bore the name "Tapco," the Technical Audio Products Corporation. Besides good quality, Tapco mixers were known for their value. For instance, there's an ad for a $189 six-channel Tapco keyboard mixer in the Dec. '76 *Keyboard*. In addition to their mixers, Tapco made graphic equalizers, spring reverbs, and power amps.

Who was the creative force behind Tapco? A guy named Greg Mackie, who now runs the company that bears his name. And just like Tapco before it, Mackie Designs has a great reputation, thanks in good part to the popular CR-1604 (reviewed in Aug. '91).

Newest from this successful mixer maker is an affordable, relatively compact (compared to massive studio desks) recording board, the 8-Bus — available in 16-, 24-, and 32-channel configurations. We opted for the mid-size version for this review.

Sonically speaking, the 8-Bus scores high marks. Whatever we pump into it comes out sounding superb. Its signal routing capabilities are impressive as well: Assigning input sources to destinations such as auxiliary sends, submaster outputs, headphone monitors, and the like requires simple button pushes, rather than major cable repatching. For the most part, the 8-Bus is flexible enough to handle practically any home-studio recording application.

What kind of competition does the 8-Bus face? The first recording console that comes to mind is the 16 x 8 x 2 Soundcraft Spirit Studio (see Keyboard Report, Oct. '91), whose price was recently increased from $3,995 to $4,275. Not only does the 24-channel Mackie equal or better the specs of the three-year-old Spirit Studio, it elegantly squeezes eight additional input channels into virtually the same real estate, it's expandable, and it costs the same as the Soundcraft used to. Additional 8-Bus competition comes in the form of the Soundtracs Topaz, an eight-bus, 24- or 32-channel console with an impressive list of features. Tascam also has recently introduced their M-2600 series of recording consoles. These mixers carry list prices that match equivalent 8-Bus boards. Since we have yet to test a Topaz or Tascam M-2600, we can't really say how either measures up to the 8-Bus. In any case, eight-track owners — or, for that matter, owners of more modest 24-track facilities — in search of a capable recording console can't afford not to consider the 8-Bus.

Overview. As on most recording consoles, the 8-Bus's vertical input channel strips occupy a majority of the control-panel surface, stretch-

MACKIE 8-BUS

Description: 24 x 8 x 2 in-line recording mixer.

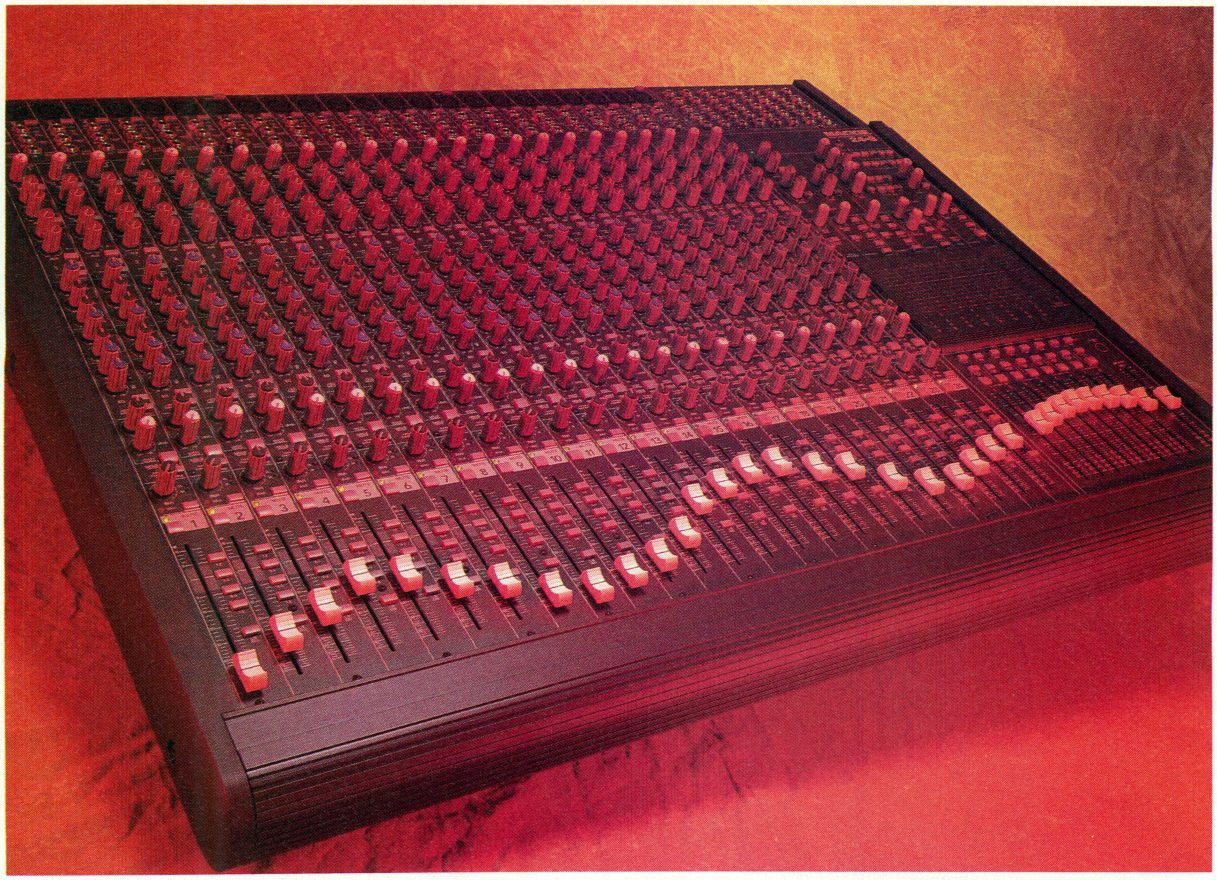
Features: 24 input channels (24 x 8 and 32 x 8 boards externally expandable in groups of 24; 16 x 8 board not expandable), each with mike/line input button, trim/gain control (input sensitivity 10dB to 50dB gain for mike, +4dB to –40dBV for line), –20dB (signal present) and overload LEDs, mike/line/tape flip button, four-band EQ (high- and low-frequency shelving [±15dB at 12kHz and 80Hz, respectively], mid- to high-frequency parametric [±15dB sweepable from 500Hz to 18kHz with adjustable bandwidth, 1/12 to 3 octaves], low- to mid-frequency semi-parametric [±15dB sweepable from 45Hz to 3kHz, fixed two-octave bandwidth]), EQ defeat button, low-frequency cut button (18dB/octave highpass filter, –3dB at 75Hz), four auxiliary send controls (1 and 2 with pre-/post-fader/mute button, 3/4 and 5/6 with pre/post button, shift button, and channel/mix-B source switch), pan control, channel solo button with LED, mute button with LED, bus-assignment buttons (buses 1-2, 3-4, 5-6, 7-8, and L/R mix), and 100mm fader. *Mix-B input section (in-line with each input channel)*: pan and level controls, source button, and EQ split button (assigns high- and low-frequency shelving controls to mix-B channel). *Auxiliary send output section*: level control and solo button for each of the six sends, solo LED. *Stereo auxiliary return section*: level and pan controls, solo buttons, and bus-assignment buttons (buses 1-2, 3-4, 5-6, 7-8, and L/R mix) for aux 1 and 2; level controls, solo buttons, and bus-assignment buttons (phones 1 and 2, and L/R mix) for aux 3 and 4; level controls and solo buttons for aux 5 and 6; solo LED. *Other output sections*: level control and L/R mix bus assignment button for master mix-B/monitor output; level control, solo button, source buttons (monitor, mix-B, aux send 3/4, aux send 5/6, and external), and solo LED for phones 1 and 2; studio and control-room level controls, source buttons (L/R mix, mix-B, 2-track, and external), and mono (left-and-right sum) for monitor output; level control and solo LED; and level control and momentary bus-assignment buttons (aux sends 1 and 2, tape submasters, and phones and studio) for talkback section. *Eight-bus output section*: eight bus channels, each with solo button, bus-assignment button (left bus for odd-numbered channels, right bus for even channels), left-and-right-to-mono button (functions only with bus-assignment enabled), 100mm fader, 24-segment (12-step resolution) LED output level indicator, and solo LED. *Main/solo output section*: 100mm left/right master mix output fader and two (left and right) 26-segment (13-step resolution) LED output level indicators. Built-in talkback mike. Two +12VDC BNC connectors for gooseneck lamps. Power LED. External rack-mount power supply.

Interfacing: *Front panel*: 24 input channels, each with TRS 1/4" balanced/unbalanced and XLR balanced jacks, TS 1/4" unbalanced direct out, and TRS 1/4" unbalanced insert. +48VDC phantom power switchable in groups of eight input channels. Eight TRS unbalanced submaster inserts, six auxiliary sends (sends 1-2 TRS balanced, sends 3-6 TS unbalanced), left and right TRS unbalanced main inserts, six pairs of TS unbalanced left and right auxiliary returns, left and right TRS unbalanced control room outputs, left and right TRS unbalanced main mix outputs, left and right TRS unbalanced Mix-B outputs, left and right TRS unbalanced studio outputs, left and right TRS unbalanced two-track inputs, left and right TRS unbalanced external inputs, and two TRS stereo headphone jacks (all 1/4"). All TS 1/4" outputs are +4dBU. All unbalanced outputs are TS. *Rear panel*: 24 TRS 1/4" balanced tape returns (TS unbalanced compatible, switchable in groups of eight to –10dBV/+4dBU), 24 TRS 1/4" balanced submaster/tape outputs (TS unbalanced compatible, switchable in groups of 12 to –10dBV/+4dBU), left and right main XLR outputs, expander port, multipin power input socket.

Dimensions: 37" x 28.74" x 5.4", 64 lbs. Power supply: 19" x 10" x 3.5" (two rack spaces), 27.5 lbs.

Suggested Retail Prices: 24-channel 8-Bus, $3,995. 24-channel meter bridge, $795. 16-channel 8-Bus, $3,195. 32-channel 8-Bus, $4,995. 24-channel expander console, $2,995. Expander console meter bridge, $695. Mixer stand, $295. Sidecar (11-space matching rack), $295.

Contact: Mackie Designs, 20205 144th Ave. NE, Woodinville, WA 98072. (800) 258-6883. (206) 487-4333. Fax (206) 487-4337.



Attention, eight-track recordists: Mackie Designs boldly treks into the recording console market with its 8-Bus mixer (including the 24-channel model shown here). Not shown is the rack-mount power supply, which is heavier than it is big.

ing from the far left across three-quarters of the total space. The remaining area contains output controls and level meters. Across the top of the control panel are most of the audio jacks, conveniently located for repatching. Whenever we see upward-facing jacks like this, we become a bit concerned that they might allow dust to enter the mixer's guts; according to Mackie, this shouldn't be a problem because the area of the mixer that contains the jacks is isolated from the area that contains the potentiometers and buttons. Any cable inserted into an input jack tends to obscure that channel's mike/line button, which is mounted between the channel's 1/4" and XLR inputs. Ditto for the phantom power buttons, which rest between the row of XLR inputs and the edge of the mixer's backside. Likewise, when installed, the optional meter bridge would make it somewhat difficult to access the top-mounted jacks, mike/line buttons, and the phantom power buttons.

All of the tape inputs and outputs — those you probably won't need to access very often — are located on the mixer's rear panel. These sends and returns are switchable to either –10dBV or +4dBU levels in groups of 12 and eight, respectively.

Despite having 24 input channels, the 8-Bus's control panel doesn't seem particularly cramped. It's logically arranged and, although your thumb and fingers tend to bump into adjacent knobs within the same channel strip, there is plenty of space horizontally between channel strips. (To clarify our use of the term "channel strips": The 8-Bus isn't a modular mixer: It consists of multiple channels that share one circuit board, as opposed to having separate circuit boards for individual channels.)

Less ergonomic, however, are the 8-Bus's pushbuttons, of which there are a ton. Many of them don't have associated LED indicators, and their travel is so shallow that the button's up/down status isn't always easy to see. Where a button's position is questionable, sometimes a quick double-click is the best way to assure it's set the way you want it. We also wish there were signal-present LEDs within each channel for the Mix-B bus.

Magic Bus. Whereas a console designed in the traditional manner offers separate input and tape-return sections — each with its own EQ, pan, sends, etc. — the tape returns in an in-line console are physically placed "in-line" within each input channel. Why go in-line? Not only does an in-line console take up considerably less space than a conventional mixer, and it's less expensive because circuitry is shared by the input channel and in-line returns. The biggest bonus: Whereas traditional consoles are designed with a fixed number of tape returns, in-line consoles always have a tape return/monitor

PROS & CONS

Pros: Excellent sound quality. Flexible signal-routing, EQ, monitor, and solo capabilities. Input-expandable. More than twice as many inputs as input channels. Eight output buses, 24 recording outputs.

Cons: Status of front-panel buttons difficult to see quickly. No groupable mutes. No individual channel muting in Mix-B bus. No phase switch on mike ins.

Bottom Line: Professional recording console quality and features at an affordable price.

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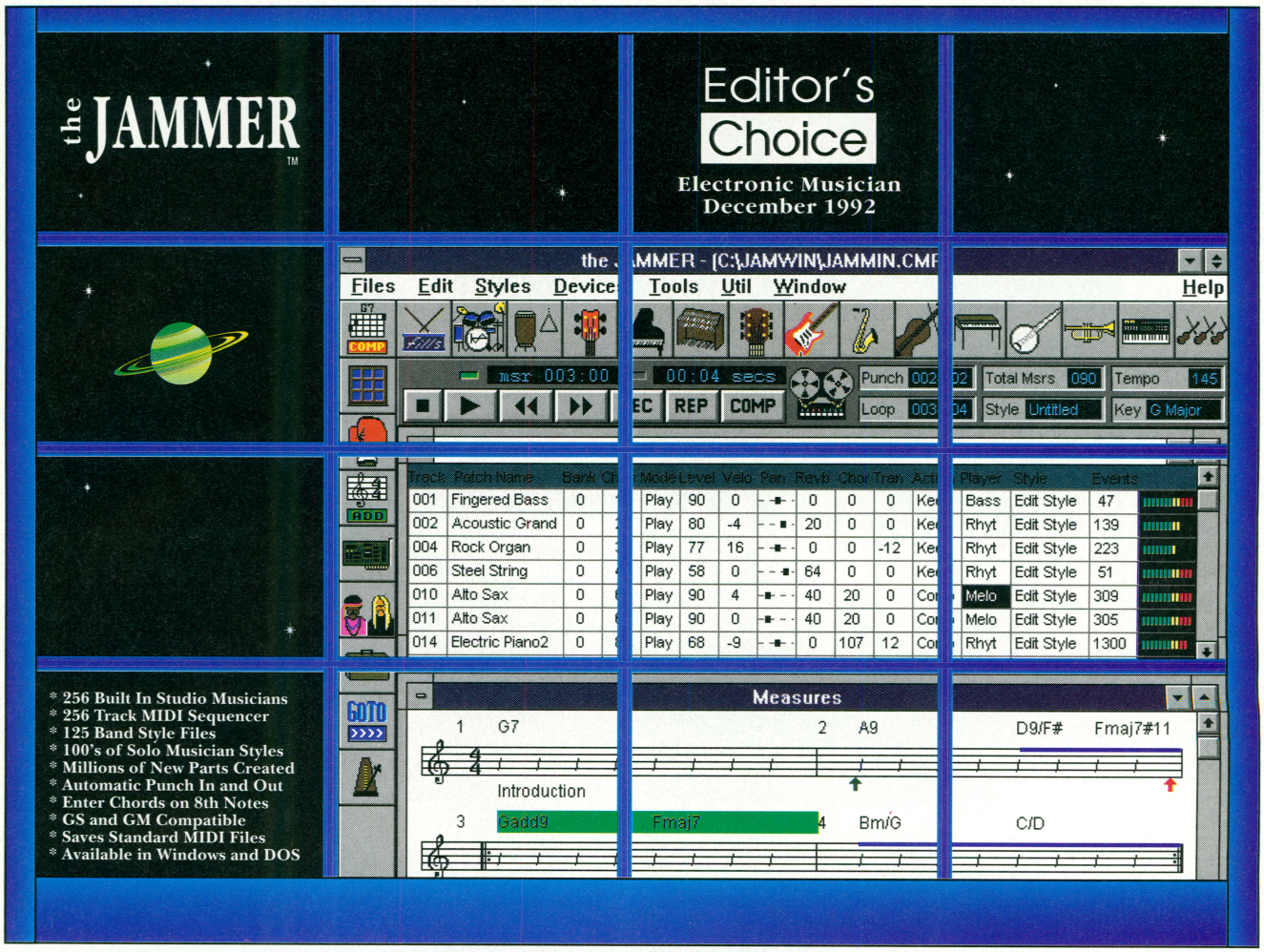

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associated with each input channel. Consequently, the number of tape returns is equal to the number of input channels, effectively doubling the number of available inputs.

As an in-line console, the 24-channel 8-Bus actually has 48 channel inputs. Pan and level knobs for the second, auxiliary group of 24 inputs are wedged into the channel strips. These feed the Mix-B bus, which is stereo and independent of the 8-Bus's eight recording and master stereo buses. To configure the board for 48 input channels during mixdown, it's very easy to assign the output of Mix-B to the master stereo bus. The 8-Bus's Mix-B bus has three possible sources per channel: the mike/line input, the tape input, or the pre-fader output of the

KEYBOARD AUDIO SPECIFICATION TESTS: MACKIE 8-BUS 24 X 8 X 2

SINCE THE INTRODUCTION OF THE CR-1604, MACKIE MIXERS have been associated with excellent sound quality at a reasonable price. According to our audio tests, the 8-Bus console won't be upsetting that tradition.

Dynamic Range. For 12 channels at nominal output, the 8-Bus's effective signal-to-noise-ratio is over 92dB (A-weighted). Given its overall low noise floor (for both line and tape inputs) and +23dB maximum output level, this console should be right at home in studios equipped with multitrack digital recording systems. The only thing we noted that was a bit bothersome: The level meters appear to be off by one (dual-segment) LED. So with the channel fader panned center and the channel and master faders set to unity gain, a 0dBu input appears on the meters as –6dBu; a +4dBu input appears as –2dBu. According to Mackie, this is because true unity gain is achieved when a channel's fader is panned hard left or hard right. When the fader is panned to center, there's a 3dB drop in level, and this is what the meter reflected in our tests. Once you understand the way the meters are calibrated, this apparent discrepancy shouldn't be a problem; in fact, the console's actual output is only off by about 0.5dBu.

Frequency Response. Mackie's published specs rate the 8-Bus frequency response at +0/–1dB, 20Hz–60kHz and +0/–3dB, 10Hz–120kHz, any input to any output. Our own tests showed the response was considerably better for line in to stereo out and tape in to stereo out. The response dropped off a smidge for line in to subgroup out, and then a tad more for line in to aux out. The response was down even more at the line in to studio and control room outputs, due to the extra amplifier stages in the circuitry at these points. These latter measurements, however, are still way above the 20kHz range — down only 1dB at 41.6kHz and 47.2kHz, respectively — and they have rolloff curves gentle enough to make the effective response (3dB down from the 1kHz reference level) 73.6kHz for the control room output and 84.8kHz for the studio out. So while the test results we got don't quite jibe with Mackie's published specs, they're quite good nonetheless.

Distortion. So, do you think Mackie would take a quiet console with excellent frequency response and then muck the whole thing up with lousy distortion specs? Not a chance. The 8-Bus shines here as well, boasting better than 0.002% THD+n (A-weighted) throughout the entire 20Hz–20kHz audio band. If you want this console to distort, you're going to have to get in there with a soldering iron and do some part swapping. —*Michael Marans*

Nominal Output Level:
0VU = +4.51dBu

Maximum Output @ 1kHz:
+23.29dBu

Maximum Output @ 10kHz:
+23.14dBu

Nominal Output Level Quiescent Noise (1 channel, 10Hz–22kHz, ref. to 0dBu):
–91.62dBu (unweighted)
–94.28dBu (A-weighted)

Nominal Output Level Quiescent Noise (12 channels, 10Hz–22kHz, ref. to 0dBu):
–85.14dBu (unweighted)
–87.73dBu (A-weighted)

Nominal Output Level Quiescent Noise (12 tape returns 10Hz–22kHz, ref. to 0dBu):
–87.72dBu (unweighted)
–90.34dBu (A-weighted)

Crosstalk @ 1kHz (relative to 0dBu, 10Hz–22kHz):

Panpot isolation: –86.54dBu (unweighted)

Panpot isolation: –87.36dBu (A-weighted)

Adjacent channel: –91.23dBu (unweighted)
Adjacent channel: –92.63dBu (A-weighted)

Mix Bus: –89.57dBu (unweighted)
Mix Bus: –90.94dBu (A-weighted)

Frequency Response, Line In to Stereo Out:

20Hz–20kHz +0.01/–0.52dB ref. to 1kHz
–1dB from 1kHz ref @ 84.8kHz
–3dB from 1kHz ref @ 152.8kHz

Frequency Response, Line In to Sub Out:

20Hz–20kHz +0.01/–0.44dB ref. to 1kHz
–1dB from 1kHz ref @ 64kHz
–3dB from 1kHz ref @ 114.4kHz

Frequency Response, Tape In to Stereo Out:

20Hz–20kHz +0.01/–0.43dB ref. to 1kHz
–1dB from 1kHz ref @ 93.6kHz
–3dB from 1kHz ref @ 166.4kHz

Frequency Response, Line In to Aux 4 Out:

20Hz–20kHz +0.01/–0.23dB ref. to 1kHz
–1dB from 1kHz ref @ 55.2kHz
–3dB from 1kHz ref @ 99.2kHz

Frequency Response, Line In to Control Room Out:

20Hz–20kHz +0.01/–0.51dB ref. to 1kHz
–1dB from 1kHz ref @ 47.2kHz
–3dB from 1kHz ref @ 84.8kHz

Frequency Response, Line In to Studio Out:

20Hz–20kHz +0.01/–0.51dB ref. to 1kHz
–1dB from 1kHz ref @ 41.6kHz
–3dB from 1kHz ref @ 73.6kHz

THD+n Line In to Stereo Out @ 20Hz–20kHz (band-limited 10Hz–22kHz, nominal output level):

maximum: <0.0104% (unweighted); typical: 0.0035%
maximum: <0.0028% (A-weighted); typical: 0.0016%

channel strip. (A fourth source, the post-fader output of the channel strip, is possible with some internal 8-Bus modifications.)

In typical recording applications, channel inputs would be assigned to a mike or line source and the Mix-B bus would act as returns from the recording machine(s). For mixdown, you would switch the channel strips so that their faders control the levels of recorded tracks, making the Mix-B bus available as additional inputs for virtual tracks from sequenced synth modules, or vice-versa.

Channeling. For the most part, each input channel's vertical configuration of knobs and buttons makes perfect sense: trims at the top, auxiliary sends, EQ, and Mix-B controls in the middle, and the panpot and fader toward the bottom. What's missing is a phase switch, which could be problematic for studios where live mikes are regularly used.

Most unusual — at first glance — is the order of knobs within the EQ section. On most mixers, you'll find the treble knob at the top, the bass knob at the bottom, and any mid-range knobs organized in order of frequency range between the treble and bass controls. On the 8-Bus, the placement of the equalization controls is a bit different. Besides high- and low-frequency shelving EQ, there are two sets of mid-range EQ controls. The mid- to high-frequency EQ is fully parametric, and the low- to mid-frequency EQ is semi-parametric. Strangely, the sweepable EQ knobs are found above the high- and low-frequency shelving controls.

Although it sounds odd, there's a practical reason why the EQ section was laid out this way: You can split the EQ so that the high- and low-mid EQ controls affect the channel's signal as usual, while the high- and low-shelving controls are assigned to the Mix-B bus. Very important: There's an EQ bypass button, so that the channel's input signal is allowed to pass clean, without any EQ — independent of the channel's shelving EQ assignment to its Mix-B signal.

A source switch is also provided in the auxiliary send section. You can assign aux sends 3 and 4 (or 5 and 6) to be used exclusively for the Mix-B bus. This kind of flexibility makes the Mix-B bus extremely handy for monitoring applications. While you use the channel faders (which are exceptionally silky and smooth) and flexible EQ controls for recording, you can use the Mix-B level and pan controls — as well as shelving EQ and two aux sends — for an independent control-room mix. The only other things we could ask for would be muting for individual Mix-B bus channels, as well as the ability to mute groups of individual channels (other than by using the submaster buses).

Six auxiliary sends are provided by the 8-Bus, but only four are available to any channel at one time. That's because there are only four aux send knobs per channel. While aux sends 1 and 2 are always available, the second pair of send controls is switchable for either sends 3 and 4 or 5 and 6. This requires you to plan your use of the sends more carefully than if all six sends were simultaneously available to every channel.

To assist in keeping your audio signals loud, clean, and clear, the overload LED on each channel indicates conditions at three locations inside the 8-Bus — at the mike/line preamp output, after the EQ, and post-fader.

Outputs. Just as the 8-Bus offers flexible input configurations, it has a variety of output possibilities. For instance, each channel has

a post-EQ/post-fader/post-mute direct out, which you can draw from without affecting the channel's assigned destination.

Tip-ring-sleeve send/insert jacks appear within each input channel strip, master channel, and submaster bus, allowing you to process the signals at each of these points with outboard gear. If you need them, the submaster inserts can be used as pre-fader direct outs by inserting a mono 1/4" plug. Depending on how far you insert the plug, you'll either tap the signal without interrupting its journey to the submaster output, or divert the flow exclusively to the insert.

The eight submaster buses are paired as left (odd-numbered buses) and right (even buses) channels. When you assign an input channel to a left/right pair, its bus assignment is determined by the channel's pan control, with a hard-left setting directing the channel to the odd-numbered bus and hard right to an even bus. Buttons in the console's output-control section allow you to assign individual submaster buses to the left and right master mix outs. Odd-numbered submaster buses will be sent to the left master mix out, even buses to the right. A mono function works in conjunction with the mix-assignment buttons to allow a submaster bus to be sent equally to both the left and right master mix outs.

The 8-Bus actually has 24 recording outputs. Each of the eight submaster outputs feeds three tape outputs: Tape outs 1, 9, and 17 carry bus 1 signals, outs 2, 10, and 18 carry bus 2, and so on. While the 8-Bus doesn't qualify as a true 24-output-channel board, you can harness it to 16- or 24-track recorders and simply record-enable the appropriate tracks as they're needed.

Independent monitor outputs with their own level controls are provided for the control room, studio, Mix-B, and two sets of stereo headphones (yes, they're independent of one another, too). In case you need to assign additional effects returns to either headphone mix, buttons are supplied to do so independently with returns 3/4 and 5/6, allowing you to hear exactly what the effects are adding to the mix.

Mackie deserves credit for arranging the 8-Bus's controls and output sections in a manner that should take minimal time to feel comfortable with. On a slightly depressing downside, though, we noticed that the 24- and 26-segment output level indicators aren't as accurate as the number of segments would imply. The meter resolution is only half this number, because LED segments are lit in pairs, not individually.

Solo Sanctity. One of the most repeated words in the enormous 8-Bus features box appearing on page 112 is "solo." Scan this mixer's front panel and you'll see solo buttons all over the place. There's a solo button for each channel, each bus output, each aux send, each aux return, even each of the two headphone outputs; the latter silence the studio and control room monitors. Soloing is in-place, and solo buttons can be used in combination, allowing you to layer different parts. There's an independent monitor level control for the solo function. When any solo button is activated, the 8-Bus's prominent, red "Rude Solo Lite" lights up, and the master level LEDs indicate the left and right amplitudes of the soloed signal(s). It's very easy to be spoiled by such convenience, making it difficult to work on a lesser mixer.

Conclusions. In designing the 8-Bus, Mackie has successfully walked the thin line between routing flexibility and ease of use. Meanwhile, they maintained a price point that should entice many a home-studio owner. Yes, there are buttons that don't indicate their status too well, but you'll learn what to look for quickly enough.

We took the 8-Bus cold-turkey into a live recording session and came out with excellent-sounding results — testimony to this console's clean design and logical layout. Mixdown was just as easy. The 8-Bus seems to invite you to be creative and experimental. Experienced multitrack recording artists should warm to it quickly. ■

In testing the Mackie 8-Bus, we used a pair of Akai DR4d hard disk recorders, Zoom 9120 and Digitech TSR-24 multi-effects processors, and an Aphex Model 106 Easyrider four-channel compressor. Thanks to Akai, Aphex, Digitech, and Zoom for lending these products to us.

YAMAHA VL1

Continued from page 111

exclusive, so make sure that your sequencer isn't filtering out sys-ex before you twiddle with them.

Although the VL1 will play two sounds at once, it receives on only one channel, so technically it will not function as a multitimbral source from external control. In dual mode, it will sound two voices, but whether they play in unison on one note or respond polyphonically depends on the voice mode setting and not the MIDI channel selection.

All of the editable parameters among the VL1's voices, modifiers, effects, and common settings can be altered through system-exclusive. The not-so-staggering implication here is that if you have a propensity for thinking in hexadecimal, you could conceivably alter the parameters of the VL1 from a sequencer as you perform. Why you would want to do so is beyond us, but hey, knock yourself out.

Conclusions. How different is the experience of playing the VL1 from playing a good sampler with clever controller routings and good cross-fading? Way. There are things you can program into the VL1 so that merely playing the keyboard takes care of them for you, transparently. Then there are things that you control as you play, which respond to your every whim, indulging you with wild abandon in raucous interactivity. Though the former method may resemble traditional synth programming, the sounds you get from even that "automatic" type of control will not sound like a PCM synth. There really is a difference as you listen from note to note: There's a continuity in both velocity response and across-the-keyboard response that samples, for all their endearing cross-fading, cannot provide. The VL1 sounds like a single instrument being manipulated from one note to another.

Is it *better* than a sampler? It's just different, that's all. You should be able to create totally convincing solo acoustic instrument emulations with the VL1, for at least five seconds at a stretch, probably much more over whole phrases. For commercial music composers, that's often all the time they need. For those who play live — and this instrument really does lend itself to that application — the issue should be not so much a matter of convincing realism as of responsive expression. For ensemble sounds, a sampler is still the way to go. Unless you want to gather a group of VL-1 players, but then you've got that dusting and feeding problem again.

Control of the sound is an issue. What Yamaha has done is to provide the VL1 user with a continuum of tools with which to alter the harmonic structure of a sound. The basic playing characteristics are determined by the instrument model, but the attributes that determine whether the instrument is realistic may not be generated at that level. With the throat, damping, and absorption controller parameters, you've got options to tamper with the realism at the "player's" throat and at the end of the bell or string. Then at the mix section, adjusting the tap point or phasing can give an instrument an altered harmonic structure. The harmonic enhancer lets you take any part of the mix section and mix it back into the sound, or even replace the sound. The filter and EQ sections can have a drastic effect on the character of a sound as well. The impulse expander, resonator, and reverb all have tonal controls, too.

Yet you don't have the opportunity to change the basic sound generating model. The horns that Yamaha gives you (or sells to you down the road) are the horns you're stuck with. They're great horns, mind you. We're just not convinced that the available controls will be enough to tweak an instrument to suit very particular applications, such as the jazz trumpet trying to put on symphonic shoes.

The VL1 is a victory for expression, but it's a victory that you will have to win. You will find unique ways to combine parameters and make assignments to achieve your performance goals, and then it'll take practice to realize them fully. You'll want to practice, guaranteed, and not only just to program clever assignments but to see how far you can take things, where the boundaries are, can you exceed them, can you push them, and so on. Heck, you'll want to just *play* the thing. It is — dare we say it? — a real musical instrument.

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YAMAHA CLAVINOVA P-500

DIGITAL PIANO/
MASTER KEYBOARD CONTROLLER

By Mark Vail

HOW MUCH WOULD YOU PAY FOR the ultimate digital piano? Before you answer, let's qualify the term "ultimate": The instrument should have several realistic, world-class grand piano sounds, along with usable renditions of electric pianos and maybe Clavinet. Built-in effects — reverb, chorusing, phasing, flanging, and delay/echo — would be vital for enhancing those wonderful sounds, as would equalization, so that you could adjust for different acoustic environments and sound systems. The sounds, effects, and EQ all have to be programmable. The keyboard action has to be impeccable — nearly identical to that of a grand piano — allowing the performer to play for hours without fatigue. A comprehensive MIDI implementation is important — preferably in the same league as master keyboard controllers — so that external synth modules can be effectively controlled from the piano.

Yamaha is banking on dedicated musicians being willing to pay a lot — as much as ten grand. That's the list price of their new Clavinova P-500, which packs all the requirements listed above and then some: assignable wheels, sliders, and buttons, aftertouch, multi-level damper and soft pedal responses, a removable support for a second keyboard, balanced XLR outputs, real-time editing operations, and on-line help. There's no arguing that the P-500 is a beautiful instrument — sonically, visually, and functionally. At $9,995, it had better be.

It isn't, however, perfect. As we'll point out below, it could be improved in terms of programmability, features, and portability.

The question potential buyers will have to answer is whether paying that much money is worth it, based on their needs. Maybe an acoustic piano would fit the bill better, or a decent master keyboard and a couple of powerful synth modules. By shopping around, you might be able to find a halfway decent baby grand for as little as $10,000 — but it will only make one sound, it will require periodic maintenance, and it won't be very portable. You can get a pretty sophisticated MIDI retrofit for any piano, but where will you put the wheels and sliders? On the other hand, a master-keyboard-driven MIDI rig will certainly be more flexible than the P-500, but also more cumbersome to set up.

Yes, the P-500 is expensive. But if you're serious about playing piano — live, in the studio, or at home — and you have the financial wherewithal, the P-500 could be just the instrument you've been waiting for.

To assist in our evaluations of the P-500, we called in some local pros to add their opinions to those of our staff. The fine folks who contributed: Lizz Fischer, pianist for blues great John Lee Hooker; piano performer and educator Don Haas; Los Angeles composer/session keyboardist Richard Leiter; jazz and new age pianist Martan Mann; producer Felton Pilate; and synthesist/programmer extraordinaire Roger Powell. We've sprinkled their insightful comments throughout this review.

Sound Surfing. Three of the P-500's 11 sampled instruments are of grand pianos. There's acoustic grand for jazz and classical (Piano 1), a bright acoustic grand for rock, jazz, and play-

YAMAHA CLAVINOVA P-500

Description: Digital piano with master keyboard capabilities.

Keyboard: 88-note weighted action, velocity and channel pressure sensing. Two internal and two MIDI split zones. Dual-voice layering.

Features: Maximum 32-note polyphony. Built-in digital effects, including chorus, phaser, flanger, auto panning, reverb, detune, wah-wah, enhancer, and compressor. Up to four effects available simultaneously. Six channels of MIDI transmission (four containing all performance data, two auxiliary channels for program change, bank select, and initial volume data). Eleven assignable MIDI/voice controllers: two panel buttons, two continuous sliders, two wheels (one spring-loaded), four foot-controller inputs, and aftertouch; selectable response curves for each controller. Two-line by 40-character backlit LCD with contrast knob. Two-character LED. Master tune, master transpose. Copy utilities, bulk-dump transmission, monitoring of incoming MIDI data, troubleshooting functions, and memory initialization routines. On-line help. Parameter grouping for simultaneous editing.

Sounds & Memory: 11 crossfading PCM multisamples: three grand pianos, six electric pianos (including Yamaha CP-70 electric grand, Rhodes, FM Rhodes, and Wurlitzer), Hohner Clavinet, and Clavinova Tone (a harp-and-strings pad). Over 32Mb of samples in ROM. 11 editable voice presets. 32 two-voice user performances. 16 chains, each comprising a sequence of up to 32 performances.

Performance Architecture: Each two-voice performance contains the following parameters for each voice: waveform, ADR envelope, vibrato depth and speed, pan position, 5-band graphic EQ, initial volume (separate for internal and MIDI), overall volume, voice tuning, stretch tuning, microtonal tuning (±50 cents from 12-note-per-octave equal-temperament frequency per key), transposition (±24 half-steps, separate for internal and MIDI), pitch-bend range (internal only, 0-3 for wheel, ±3 for aftertouch or sweep pedal), keyboard scaling (seven curves and definable center key, separate for internal and MIDI), keyboard velocity response (20 curves, separate for internal and MIDI), keyboard mode (single, dual, and split, separate for internal and MIDI), foot controller assignment (four inputs, 20 internal and 26 MIDI controller destinations, nine separate internal and MIDI response curves), wheel, slider, button, and aftertouch assignments (separate for internal and MIDI, nine response curves each), program change (separate for internal and MIDI), bank select, program change reception enable/disable, MIDI transmit enable (separate for internal and MIDI), MIDI reception enable/channels (separate for both voices), local on/off status. Performance name, MIDI merge enable/disable, plus transmit channel, program change, bank change, and volume parameters for two auxiliary MIDI paths.

Effects: Two processors (modulation and reverb) shared by voices A and B in each performance, third processor ("effects") available separately for each voice. Modulation: chorus, phaser, auto-pan, flanger. Reverb: seven basic types, three rhythmic echo types, six special types that also use the modulation processor. Effects: Enhancer, compressor, detune, chorus, phaser, auto-pan, wah, soundboard resonance.

Interfacing: Unbalanced 1/4" left/mono and right outputs, balanced left and right XLR outputs, 1/4" stereo headphone jack. Four TRS footswitch/sweep pedal input jacks. MIDI in, out, thru. AC power input.

Dimensions: 57" x 21.5" x 30.5". 121 lbs.

Suggested Retail Price: $9,995.

Contact: Yamaha Corporation of America, 6600 Orangethorpe Ave., Buena Park, CA 90620. (714) 522-9011. Fax (714) 522-9301.

The cabinet of Yamaha's Clavinova P-500 is a blend of black plastic and mahogany wood. Conveniently mounted on top is a detachable prop for supporting a keyboard synth without marring the piano's finish. Two of the P-500's three legs have slotted channels in which to run the power and footswitch-module cables from the floor to the P-500's underside; a removable cover conceals the cable within each leg. The middle leg is aluminum.

ing in large ensembles (Piano 2), and a bright piano with a tighter, more focused sound than Piano 2 (Piano 3). How do they rate? Absolutely wonderful. These are some of the best sampled piano sounds that we've heard. Although you can hear loops in the low notes, they aren't so obnoxious that they're detrimental. There aren't any obvious split points between multisamples, and the instrument accurately responds to varying key velocities by crossfading smoothly from one timbral layer to the next. One player proclaimed, "The volume dynamics are excellent. This instrument should satisfy someone who's used to practicing on a grand piano. It sounds relatively natural down at the low velocity end. Timbrally, the piano sound seems to grow in direct relation to attack force."

"I like the thunk in Piano 3," one of our judging participants said. "To me, that kind of thing makes the sound less sterile, as long as it doesn't get in the way. It's a subtle thing." "You can hear the resonance of the piano body in Piano 3," testified another player. "The tonal quality — at least on Piano 3 — is pretty realistic in terms of getting brighter the harder you play," explained a third. "It gets massive. When you play in the high end, you hear the hammer, but it doesn't intrude. It's very well blended." According to a fourth participant, "This would be a great instrument for me to use live, because it has so many variations on the piano."

A row of 16 buttons allows you to select different P-500 sounds. Three buttons adjacent to these let you select the preset voice bank or either of the two performance banks. The preset bank features 11 single-voice presets. The sampled sound assigned to each of the presets is fixed at that location, but you can save your own effect, volume, transposition, velocity-response curve, controller assignments, and MIDI settings, including the program change number that's transmitted when you recall that preset.

Following a faithful rendition of the classic CP-70 Electric Grand come five electric pianos: traditional Rhodes, a Dyno-My-Piano Rhodes (which had a brighter, emphasized-tine sound), two bell-like timbres representative of the Yamaha DX7 sound, and a '60s-vintage Wurlitzer. One player questioned the inclusion of the CP-70: "Maybe some people are nostalgic. Maybe it cuts good at high volume. The midrange is really nasal. The low end is out of tune, screwed up — like it's supposed to be." "I'm glad the Wurlitzer electric piano is here," another admitted. "That sound is a big part of the tradition of rock 'n' roll." "I'm a sucker for a good tine," joked another. "For a good tine, call . . ." It's great that Yamaha has re-thought the clichéd sound lineup for this type of instrument: In place of vibes, there's a plucky Clavinet, star of R&B and funk hits of the past.

What would you pick for the final sample in the "ultimate" digital piano? Yamaha stuck with a sound that's been found on almost all of its digital pianos for the last several years, the Clavinova Tone. This beautiful blend of harp and strings evokes new age images, and it's quite useful both as a solo voice and as a shimmery layer for the other sounds.

Some people might complain about the absence of organ, vibraphone, and harpsichord, but we tend to agree with Yamaha's choices for the P-500's timbre complement. All of the sounds — alone or layered — encourage you to keep playing. We do wish, however, that the

PROS & CONS

Pros: Excellent piano and related sounds. Wonderful keyboard action. Extensive MIDI implementation and controller functions. Removable stand for second keyboard.

Cons: Expensive with a capital E. Only two keyboard split zones. No sequencer or disk drive. Roadie not included.

Bottom Line: You'll really appreciate this instrument's sound, feel, and features, especially if someone else buys it for you.

PHOTO: PAUL HAGGARD

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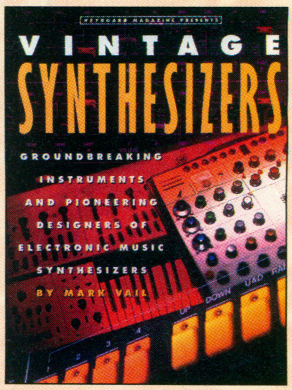
This is a book for all those synth players who "long to rediscover the sound of analog oscillators beating wildly against each other in an orgy of warm fatness that would expose any modern-day digital synth's sound as so much anemic wheezing pap," as Dominic Milano remarks in his foreword to the book.

Author **Mark Vail** joined the editorial staff of Keyboard magazine in 1988 and took over the "Vintage Synth" column from Bob Moog in early 1990.



VINTAGE SYNTHESIZERS: Groundbreaking Instruments and Pioneering Designers of Electronic Music Synthesizers

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YAMAHA CLAVINOVA P-500

P-500 offered more than 32-note polyphony, which will get cut in half when you layer two voices. Any pianist who plays romantic piano music and uses the damper pedal extensively will quite likely run out of notes.

Sound Programming. Layering two P-500 sounds is as easy as simultaneously selecting their voice buttons. Each voice has its own independent EQ, effects, tuning, transposition, controller assignments, MIDI configuration, and more. You can store all of this information, along with an eight-character name, into one of the P-500's 32 performance locations. A performance might have a single voice assigned to play across the entire keyboard, two voices layered across the keyboard, or two voices assigned to the two sides of a split point.

You can position the voice you're playing to one of 15 positions in the stereo field. To widen its stereo image, you can "spread" the voice from a tight, focused position to one emitted more distinctly from the left and right speakers.

If you prefer vibrato in your sound (hopefully not piano), you can add from a little to a lot. Since this is a digital piano, not a synthesizer, all you get to control is the vibrato's depth and speed. Unless you assign the mod wheel (wheel #2) or another controller to regulate the vibrato, it will sound as long as you play any notes.

Like a synthesizer, the P-500 provides the hooks to fiddle with the amplitude envelope of its voice. Compared to contemporary synths, though, the P-500's envelopes are very crude. You can tweak the voice's attack, decay, and release times — with an extremely coarse resolution of eight steps from instantaneous to about a two-second span. In adjusting the attack time, we noticed little if any change at the fastest three or four settings, but considerable difference at the slower times. It's easy to duplicate the chopped-off sound of some bad old digital pianos by shortening the decay time. Individual envelope segments can be modulated from real-time controllers.

We discovered an interesting peculiarity after dialing in the slowest ADR times on Pianos 1 and 3 and playing chords in the upper part of the keyboard: As the sound fades in, it's accompanied by a rumbling sound not unlike distant thunder. The higher you play on the keyboard, the breathier and less subtle the rumble. Piano 2 doesn't exhibit this anomaly.

Five-band graphic equalization is provided in two independent, additive forms, one that's stored with each sound, the other adjustable in real time thanks to the five dedicated sliders to the far right of the P-500's front panel. These sliders are identified according to the frequency band that they cover: low, low-mid, mid, high-mid, and high. Center detents indicate no boost or cut in that frequency range.

The programmable EQ is virtually identical to the front-panel version, except that the EQ parameters, their current numerical values, and single-character graphic indicators of the values appear within the LCD. A separate parameter allows you to boost or cut the EQ output level as a whole.

Keyboard Action & Pedal Play. We recorded varying opinions about the P-500's keyboard. Most were positive. "The keyboard feels very natural," one player reported. "It's pretty well balanced, it has a nice return, it feels good when it bottoms out, and you feel like you have good nuance control." Another felt the action was "a little rubbery. The keyboard doesn't feel like that on a real piano. It has more of a bouncy action." "I really like the responsiveness of the keyboard," said another. "It's one of the most playable keyboards on an electronic instrument that I have ever encountered. It produces a realistic volume response when you play it, which makes it easy to bring out inner voices in a polyphonic passage."

Enhancing the P-500's piano realism is the damper pedal's ability to produce partial pedaling effects. The further you depress the pedal, the longer notes will ring after the key is released. The resolution of the pedal's position is very fine. Sforzando-piano pedaling is another technique that's supported. By playing notes and depressing the damper pedal as or just after you release them, you can partially damp the notes and then allow them to ring at a lower level. The results are quieter and have softer fundamental frequencies than normal notes you

play, but lack the breathy quality of sforzando-piano pedaling on an acoustic piano.

One of the effects processors provides a pedal-controllable "soundboard" algorithm, which is apparently intended to mimic the acoustic resonance that occurs throughout the body of a piano when the damper pedal is depressed. While this creates a fairly realistic effect if you press the pedal and then strike a key, it doesn't work very well in normal playing, where you're more likely to press the pedal after the onset of each new chord. At high levels of pedal response, the damper pedal will produce a pronounced and unnatural volume swell each time it is pressed; if the pedal response in the effect is set low enough to mask this, you almost can't hear the difference between effect and no effect.

The soft pedal provides multiple levels of response, and the piano timbre changes subtly depending on pedal position. Actually, all four of the pedal inputs will work with sweep pedals for continuous control. (Essentially, the P-500's pedals work like spring-loaded sweep pedals.)

FX. We know of no digital piano that offers a wider variety of effects, or better-sounding ones. "I'm tired of hearing the same reverb effects over and over on sophisticated instruments," complained one player. "Yamaha has been creative here."

Four separate processors are available for massaging P-500 sounds. The reverb and "modulation" processors are shared by the two voices in a performance, but each voice has its own "effect" processor. Along with less common effects like an enhancer and a compressor, the latter provides detuning, chorusing, phase-shifting, auto-panning, and wah-wah processing. "The phase shifter is real retro," one player remarked. "I'd find a lot of uses for it." Three types of enhancer effects are available. There's a general-purpose, full-range version that's especially effective on piano, one that creates a brighter, metallic tone by preserving more of the midrange to high frequencies in the sound, and another that generates a harder, tighter sound. Likewise, there are three kinds of wah: LFO-swept, velocity-controlled, and delayed. On electric piano and Clav, the velocity wah is our favorite of this group, although delayed wah sounds cool too.

Several of the effects offered by the "effects" processor — chorusing, phase-shifting, and auto-pan — are duplicated by the "modulation" processor, which is neat because you might want to process the two voices in a layer with different versions of the same type of effect. (Each of the two voices can be switched on or off for the modulation processor). Also, the modulation options are more flexible. For instance, with chorus you can have the basic all-purpose chorus, chorus with detune, chorus with pan, bright chorus, and wide chorus, which generates a deeper pitch variation than the others. There are two phasers, light and subtle or deep and more pronounced, and two types of auto-pan, one driven by a triangle wave so that the source sweeps back and forth across the stereo field, the other by a square wave so that it jumps between your speakers. The final effect generated by this processor is flanging.

Reverbs and delays come from the third processor. The reverb send depth can be adjusted separately for the two voices in a performance. There's no wet/dry control as such, so you won't be able to get more than about a 40% wet sound, but a reverb-drenched sound is a special effect that you wouldn't normally expect from a piano in any case. A familiar cast of reverb types is presented, including halls, rooms, a plate, and an unnatural but evocative early-reflections environment. Also provided are six special reverbs, which tie up both the modulation and reverb processors. We were pleased with the reverb quality. Even at the longest decays, reflections come back with good, bright clarity. You can adjust the high-frequency content of the reflections using the high-damping parameter, but there are no parameters for adjusting early reflection level or predelay — items that are considered standard in far less expensive instruments.

Three different stereo echoes are provided, each of which can also add some reverb if desired. The echoes have very little in the way of programming flexibility. All you get to do is select one of three types of echo and adjust the

tempo, reverb amount, high-frequency damping, and the amount of input from each voice. The three echoes are all stereo taps; one produces straight quarter-notes that bounce alternately left and right, and the second and third add quieter triplets or sixteenth-note echoes to the quarter-note pattern. This is a rather naïve delay implementation, but we do like the way echoes are tapped back and forth across the stereo field, and you can modulate the depth of the effect from a real-time controller.

With all of the effects, you get to make only limited parameter adjustments. Not only is the number of parameters way fewer than that provided by a typical effects processor, but a maximum of 32 values is available for each parameter. While changes at the lower end of the scale are minute, adjustments at the upper end may seem huge. For example, decay times for a reverb or echo effect range from 0.3 to 9.9 seconds at increments that start at .05 seconds and grow to a 1.1-second leap at the top.

It would have been nice if, like some digital pianos, the P-500 had stereo inputs, so that you could route signals from external instruments through the P-500's effects and EQ.

MIDI Implementation. Instead of feeling as if they were tacked-on as an afterthought, MIDI functions are seamlessly integrated into the P-500's operating system. You get four channels' worth of control in each performance. Each of the two internal voice paths transmits on its own MIDI channel, complete with independent transposition offset, program change, bank change, initial volume setting, and velocity- and aftertouch-response curves. In addition, there are two separate MIDI paths that offer the same checklist of transmission operations. You can independently split either the voice or MIDI paths, and each path can be assigned a different split point. Unfortunately, you can't specify a key range for each path, which would essentially give you four independent zones.

Two auxiliary MIDI paths can transmit program changes, bank changes, and initial volume data, for controlling MIDI-based effects processors and mixers.

With its 11 sources of controller data — aftertouch, two wheels, two sliders, two buttons, and four foot controllers (switches or sweep pedals) — the P-500 offers plenty of real-time control possibilities. Not only is there an extensive list of destinations to which you can assign each controller, there are also a variety of response curves to choose from.

We're glad to report that you can enable MIDI merge on the P-500's MIDI in, so that you can drive P-500 voices as well as external synth modules with a sequencer or external MIDI controller. The P-500 won't output MIDI clocks to control the tempo of a sequencer or drum machine, but it will transmit start, stop, and continue commands. We can't help but wish the P-500 had a simple built-in sequencer for use as a scratchpad. The addition of a floppy drive would also be helpful, for storing sequences and system-exclusive data from other MIDI gear, as well as for loading MIDI files for playback.

To deal with potential stuck-note problems, a panic button is mounted to the right on the control panel. Besides shooting out an all-notes-off message for each channel, the panic function resets aftertouch, the mod wheel, and pitch-bend for each MIDI channel. The panic function fails to transmit individual note-offs for each of the 16 MIDI channels for older synths that ignore the all-notes-off message.

Seeing Eye. At best, we'd classify the P-500's visual interface as disappointing: a standard two-line backlit LCD and an ordinary two-digit LED display. While we appreciate improved LCD graphics like the single-character bars that grow or shrink as you increase or decrease some parameters, we'd really prefer something more substantial — especially after spying the VL1's brilliant display. (See the VL1 review on page 104.) On the good side, you can check the status of certain functions in play mode by depressing any of the eight function buttons lined up beneath the LCD.

On-line help can run the gamut from extremely beneficial and educational to totally useless. The help function on the P-500 falls somewhere in the middle. It does provide information about the current display, but because

Continued on page 141

ALESIS QUADRASYNTH

SAMPLE PLAYBACK SYNTHESIZER

By Ernie Rideout

ALESIS HAS BUILT ITS REPUTATION ON delivering products with a remarkable feature-to-price point ratio, first with rackmount multi-effects, then drum machines, hardware sequencers, mixers, and, most recently, the ADAT digital audio recorder. Several of these instruments have set new levels of what sort of bang you could expect for a buck, providing tremendous functionality at prices that average musicians could seriously consider spending. In a few cases, they have all but wiped out the competition as a result. This philosophy is at the heart of the new QuadraSynth, which, true to form, has many more features and capabilities packed into it than its modest price would indicate.

The specs alone might be enough to convince you. The QuadraSynth has a 76-key keyboard, 16Mb of ROM waveforms, 64-voice polyphony, 16-part multitimbral operation, built-in effects, two sets of stereo analog outputs, and a proprietary digital output designed for use with the Alesis ADAT. Any one of these features would be at least notable in a synth at this price, but to have all of them in one instrument is something to write home about. Dear Mom. . . .

What the specs don't tell you is how deep the programmability is — ADSR envelopes with delay, flexible modulation routings and four-tone program layering. It's also quite easy to learn to use.

While it definitely is a bargain, you will still need to decide if the QuadraSynth is worth the investment to you. With this in mind, let's unveil this long-heralded debutante and see if Alesis has yet another success in the offing.

The Once-Over. The first thing that you'll notice about the QuadraSynth is its unique appearance. The big fat knobs and protruding buttons may strike you as being either futuristic or retro. In any case, the instrument has won the "Excellence in Design" award at the Appliance Manufacturer's Conference competition. Your eyes will no doubt be drawn to the large disk above the left end of the keyboard. Although it resembles a coaster for a beer can, it's the volume control wheel. Made of blue-gray rubbery material, it practically calls out to be touched, and it is very pleasant to do so. It's got a wonderfully wide throw, but the volume level drops off to zero suddenly towards the bottom of the throw, rather than fading gradually to nothing. It'd also be great if it were reassignable as a MIDI controller. Sigh.

The pitch-bend and modulation wheels are made of the same rubbery material as the volume wheel, and they, too, invite skin contact. Closer together than Minimoog-style wheels, they are of small diameter, and that and their chunky width make them very easy to manipulate simultaneously with two left-hand fingers.

The buttons for selecting programs, edit modes, performance modes, edit functions, and software pages aren't as much fun to touch as the wheels, since they are made of hard plastic. With their raised design, our fingers would often slip off, sometimes pushing an adjacent button in the process. But they do their job, and it makes for a very simple, streamlined panel layout.

At the far right are four more dials, made out of that same rubber made famous on the left side of the keyboard. These are the Quad-knobs; they are used for data entry, along with the Quad buttons beneath them. Moving one selects the parameter assigned to it in the display, and you can globally choose between an immediate mode that enters values as soon as you start to move the dial, and a pass-thru mode that makes no change until the knob passes through the current data value. These make editing very easy, as we'll see in a moment.

The LCD provides a wide window into the soul of the QuadraSynth. The operating system has been designed so that the LCD gives you a lot of information about the instrument's current status, and the options available for editing. No guessing about how many pages left to scroll through here. Unfortunately, there is no way to jump directly to particular software pages; you must first scroll through the function list and then through the software pages for the selected function. Scrolling does wrap around, though, so at least you don't have to scroll all the way through the list to get to the beginning or end. (See Figure 1, page 128.)

The only thing that's left to look at is the keyboard. There they are — 76, count 'em, 76 keys. This is the least expensive synth on which you can find a 76-note keyboard. Playing-wise, the response of these unweighted synth keys is good, not sluggish at all. The aftertouch has a large physical throw to it, and gives a clunk at the bottom, but doesn't feel loose. The keys make an undue amount of mechanical noise, however, so much that we found it difficult to hear the instrument when playing through headphones, since the headphone output level is low. Another potential problem is that the highest key is not protected by casing on the outside edge, and could suffer damage in the course of careless handling. For hotshot players, on the other hand, there's nothing to obstruct a fleet-fingered right-hand run off the end of

ALESIS QUADRASYNTH

Description: Sample playback synthesizer with MIDI controller capabilities and built-in effects.
Keyboard: 76-note synthesizer action, *E* to *G*. Velocity, release velocity, and channel pressure sensing.
Memory: 128 ROM programs, 128 RAM programs. 100 multitimbral ROM mixes, 100 RAM mixes. 128 ROM effects programs, 128 RAM effects programs. 512 programs, 400 mixes, 512 effects programs on RAM card. 16Mb internal waveform ROM. Up to 8Mb additional waveform ROM on ROM card.
Voice Architecture: Up to four voices per program, each with effect level, tuning, modulation routing, modulation and filter tracking, lowpass filter, three four-stage envelopes, and three LFOs. Up to six modulation sources and six destinations per voice. Polyphonic portamento.
Features: 64-voice polyphony. 16-part multitimbral operation. In Mix mode, up to 16 split and/or layered zones. Four data entry dials. QuadraVerb-like effects. Proprietary digital output for use with ADAT. Built-in carrying handle.
Interfacing: Sustain pedal in, two programmable footpedal ins, 1/4" L/R stereo main outs, 1/4" L/R stereo auxiliary outs, digital optical out, 1/4" stereo headphone out. MIDI in, out, thru. Data card slot.
Dimensions: 48" x 4 1/2" x 14". 39 lbs.
Suggested Retail Price: $1,499.
Contact: Alesis Corporation, 3630 Holdrege Ave., Los Angeles, CA, 90016. (310) 558-4530. Fax (310) 836-9192.

Dashboard from a '62 Plymouth with a push-button tranny? Nope. Portable Holodeck interface? Close, but no stogie. It's the QuadraSynth, whose rakish lines garnered it the "Excellence in Design" award at the recent Appliance Manufacturer's competition.

the keyboard.

Leaving no synth unturned, we took a peek underneath the instrument. Directly behind the LCD, what appears to be a compartment for several D-size batteries is actually a carrying handle. We don't recommend hauling a QuadraSynth onto an airliner this way, but it sure is handy for taking it from room to room.

Overview. The QuadraSynth operates in one of two main modes: Program or Mix. Program mode lets you play a single program at a time, transmitting and receiving on any single MIDI channel. Mix is the multitimbral mode, letting you layer, zone, and/or split up to 16 different programs. You can apply one effects preset to a program or a mix at a time.

Each program can combine up to four voices, which play the basic samples in the QuadraSynth's ROM. Each voice has its own key range, so you can layer or split the voices, or use a combination of splitting and layering. There are 13 preset velocity curves to set up velocity crossfading between voices, with curves available for two-, three-, and four-voice programs, as well as linear and inverted curves. The curves are not user-definable, though. Each voice can be tuned in half-steps over a four-octave range, and in cents over the range of a whole-step. It's unfortunate that there's no way to program alternate temperaments. If a transposition exceeds the upper limit of a ROM sample's transposable range, the QuadraSynth folds the notes down an octave. Portamento can be mono or poly per voice. Poly portamento can yield amusing results, as glissandi may occur between seemingly random voices, depending on which key is struck first.

LFO and envelope generators are available for each voice at each of the pitch, lowpass filter, and amp stages. Each LFO has seven waveforms to choose from, mono or poly modes (in which LFO is in sync or independent for each voice), and programmable delay time and speed, plus real-time control from the mod wheel and aftertouch. The envelope generators are ADSR with attack delay and sustain delay, and they can be set to start at the beginning of the envelope with each note-on, to begin at the current level, or to complete the cycle even if the note is released.

Modulation routing allows up to six sources to be assigned to up to six destinations, with all routings available independently for each voice. The standard sources are available, such as note number, velocity, wheels, LFOs, and so forth. In addition, there is a trigger rate follower, which determines the mod rate based on how quickly notes are being played, and a tracking generator, with which you can rescale the input of any mod source to a nonlinear map of your own devising. Among the destinations are just about every envelope and LFO parameter you can think of, as well as pitch, amplitude, filter cutoff, and effects send level. Different envelope stages can be desti-

PROS & CONS

Pros: Inexpensive. Easy to use. Programmable. Excellent modulation routings. 16Mb waveforms, 64-voice polyphony.

Cons: Mechanical noise from keyboard. No resonant filters. Low output volume.

Bottom Line: A lot of synth for the money.

PHOTO: PAUL HAGGARD

nations, so you could map velocity to shorten attack time without also shortening the release time. Very cool indeed.

The filter is a simple lowpass type with settings for keyboard tracking, and adjustable control from velocity, pitch wheel, aftertouch, and LFO. It would have been nice to have a resonant filter, but at this price, you're still getting a lot of synth power.

After that, there's really not much left to do except assign the level, pan, output configuration, and effects bus for each voice. Alesis has limited pan to a seven-stage scheme with no real-time control, neither from controllers nor from an external sequencer in Mix mode. There are two pairs of outs, main and auxiliary, any of which can be made into individual outs by panning the voice hard left or right. You can assign each voice to one of four effects buses, which determine which effects are applied in an effects program (see below).

Mix mode, as we mentioned, is the multitimbral mode, and therefore it's where you'll create your sequencing and controller setups, including level, panning, and effect send options apart from those in the individual programs. You can combine up to 16 programs by layering, splitting, or both. The difference between this and layering in Program mode is that in Mix mode each layer has its own MIDI channel, whereas in Program mode the four voices have one channel in common. A key range can be set for each program, as well as pitch over a six-octave range, but crossfading and velocity switching are not available in this mode.

We saw earlier how each program can have its own effects patch. When combining programs in Mix mode, these associations are overridden, although a mix can be linked to the effects patch associated with one of its programs. Effects levels and bus assignments can be set for each program, or the levels and assignments of the program can be retained.

MIDI out channels for each mix can be set in one of several ways. In FRM MIX mode (equivalent to MIDI Multi mode), each active channel of a mix receives and sends on its channel number. In CH SOLO mode, you can select a single channel that will transmit MIDI as well as respond to incoming MIDI messages and keyboard control, while any other channels that may have been active respond only to MIDI control. Selecting OUT 1 through OUT 16 prevents the keyboard from playing a channel's internal sound while still transmitting MIDI messages on that channel. This latter mode is basically local off.

Sounds. Overall, the QuadraSynth sounds bright enough to cut through the standard barrage of drums and guitars that so often confront keyboardists, although the output level is lower than on some comparable instruments. In our studio, we had to boost the QuadraSynth a bit at the board so that there was parity between it and the other instruments in our setup.

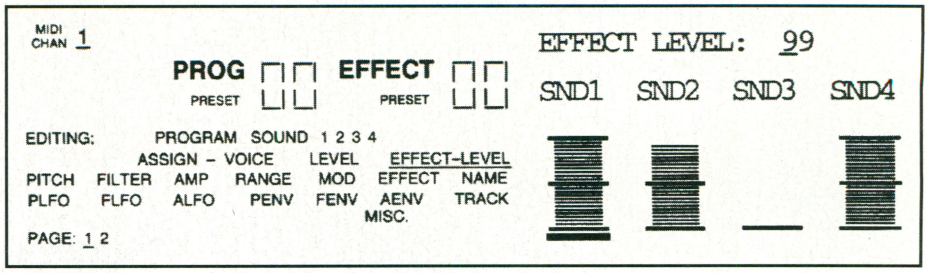

Fig. 1. The LCD view in Program edit mode. Across the top left are the MIDI channels: In Program mode the current transmit and receive channel is displayed; in Mix mode all active channels would be shown. Beneath that are the current mix (in Mix mode), program, and effects program numbers. Under those is a list that represents all functions available for the mode you're in. Depending on the function selected, the number of software pages for that function is indicated at the bottom of the display.

In the right half of the LCD are up to four vertical bar graphs, each corresponding to one of the four data-entry "Quadknobs." Moving one activates the appropriate graph, which is then underlined. The current value of the active graph is shown in the upper right of the display. The graphs can represent anything from voice names to reverb times to envelope levels, depending on the edit mode and function selected. An operating system as consistent and clear as this makes it very easy to use the instrument both at the level of combining presets and at deeper programming levels.

This is the first synth at this price that contains 16Mb of ROM waveforms. Stylistically, the collection gives you a wide range of samples. To give you an idea of the range of sounds available, here are the waveform categories from which you can build your programs: piano, organ, keyboard, synth, waves, bass, guitar, brass, woodwind, string, ensemble, ethnic, voice, sound FX, drums, and percussion. There are many samples within each category, many of them multisamples, for a total of well over 400 basic sounds.

There's a great variety of interesting synth and wave samples, which explains the high number of killer analog and techno programs. As we said, the QuadraSynth has no resonant filters, so all those long, thick analog sweeps you hear are responsible for a fair chunk of that ROM real estate. There are several versions of each sweep, each with a slightly different harmonic content, so with crossfading, you should be able to come up with some convincing sweep programs. Lead and pad waves are well represented, both analog and digital.

The woodwinds stand out, and the flute sample with vibrato in particular is wonderful. There is a lot of variety among the string, wind, and brass samples, and while they don't all sound realistic, they provide a wide timbral palette. If you'd rather have a sample of a string sample, there is an excellent Mellotron string wave. The realistically noisy synth string waveform was sampled from an ARP string ensemble patch.

The synth bass and bass guitar patches sound great alone, but don't quite have the *oomph* to hold up against a thick orchestration on the right side of the keyboard. Even with the amp cranked and bass boosted to the point of shaking the studio floor, we found deep bass notes disappeared under the chords, stabs, and pads we were playing.

The ethnic category is an enigma; perhaps by calling it that Alesis wishes to evoke a minimal Haiku-style approach to sound design. Why minimal? Well, there are only six sounds: Two harmonicas, an accordion, a banjo, a waterphone, and an Asian drum. Gee, is your ethnicity represented there? Why not call this category Stuff We Couldn't Fit Into Other Categories? We hope that we'll see a real sampling of the wonderful sounds the world has to offer when Alesis releases ROM cards in the future.

There are three piano waves, one of which is very bright and clearly intended for pop styles. The acoustic piano has a lot of hammer noise at soft dynamic levels in the upper register, and it sounded dull overall to our ears. The organs are good, with a variety of drawbar configurations to choose from. Many good keyboard and electric piano sounds are to be found as well. SFX-wise, there are some great analog attacks, and the most annoying samba whistle ever. A nice variety of choir sounds are available, too.

If you're into programming your own sounds, or if you just feel compelled to scruitinize the instrument's raw waveforms, you may discover a blemish or two. For example, a couple of the filter sweep samples have bad loops in the lower part of the key range. The acoustic bass has a noticeable loop problem as well, although you won't notice it when you play walking patterns. The vibes sample has a click in it. The oohs have a slightly audible loop that manifests itself as a rhythmic beating. In the context of a program, though, the QuadraSynth's envelopes, layering, and effects should easily compensate for any clinkers you may hear at the waveform level.

The ROM programs show the instrument off

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nicely, although they don't fully implement all the samples and modulation possibilities. We were sent an advance, pre-release copy of the RAM programs, and we were more impressed by the utilization of interesting routings. And third-party sound designers could have a field day loading up the 8-meg ROM cards Alesis will be offering.

The QuadraSynth won't sustain voices that are sounding when you switch to a new program, so you'll hear an abrupt sound cutoff if you press the program buttons or the value buttons while a voice is sounding. In both modes, the same is true when the instrument receives program changes via MIDI, unfortunately, so you'll have to plan your sequences so that the QuadraSynth won't receive a program change on a part while that channel is sounding. The reason for this is that changing programs also changes the effects program. In Mix mode, there are two ways of linking the effects program. The effects program can be linked to the mix, so program changes will only change the program on the channel that the change is sent on, not the mix or the effects program. Or, the effects program can be linked to a program, so program changes received on that program's channel will also change the effects program.

In terms of overall clarity of sound and realism of acoustic programs in particular, our subjective opinion is that the QuadraSynth rates better than a Korg 01/W, but not quite as good as a Roland JV-30, and is perhaps most comparable — sonically — to the E-mu Proteus. In terms of sounds that are compelling and exciting, though, the QuadraSynth does better than the competition. (It also arguably edges the others out when you consider its feature set and programming power.) Listening for yourself is, as always, the best procedure.

Some really interesting things could be just around the corner for the QuadraSynth. Advance reports indicate that Alesis may offer a program for the Mac that will convert SampleCell and Sound Designer files to QuadraSynth wave format, and will also download them via MIDI to the QuadraSynth, which can then save them onto a programmable PCMCIA data card (the same type of card used on the Apple Newton and many video games) that fits into the card slot on the back panel. That card reportedly will also store program data. That means, of course, that you'll be able to stuff your QuadraSynth with whatever sounds you like, assuming you already have a Mac, SampleCell or Sound Designer, and some means of digitizing the sounds in the first place. According to Alesis, this as yet unnamed product may be released in the near future.

Drums. Yes, they're here in vast quantity, but they've gotten short shrift sonically. There are four complete kits among the basic voices, three of which are mapped for General MIDI usage. In addition to these kits, nearly every drum and percussion sound is available as an individual voice, mapped across the entire keyboard. In all, there are 122 drum and percussion sounds; plenty of kicks, snares, toms, and percussion. There's a useful side stick, which will come in handy for setting up a click track.

Most of the drum and percussion sounds are directly ported from the Alesis D4 drum machine. There are also a few new samples. If you like the D4, you'll probably like these. We found the drums to be the most disappointing of the QuadraSynth's sounds. They lack punch and clarity, and the cymbals in particular are not up to what competing instruments provide. The congas and bongos sound more like pieces of wood than drums; they lack depth. The short guiro sample was played too slowly, and the damped triangle doesn't sound damped at all, rendering them all but useless.

Dynamic contrast is good, however, and at the soft end of the velocity scale you'll find excellent response, with well-done crossfading beefing things up at the loud end. If only "soft drums" weren't an oxymoron.

In addition, the QuadraSynth lets you do plenty to these sounds to spruce them up. You can treat drums as you would any voice in a

program, assigning an entire kit to a voice, or a bank of toms, or any combination of layers. The sounds are then subject to whatever tuning, panning, or envelope settings you care to throw at them. Any layer of a program can be switched to a special Drum mode as well. Although this limits the envelope and LFO activity and doesn't let you access the kits, it does let you assign and map up to ten individual percussion sounds in that one layer, complete with level, pan, effects level, tuning, filter, and amplitude settings for each sound. This lets you layer percussion sounds with a kit, or replace portions of a kit with individual sounds, or create an entire kit from scratch. With ten voices per layer and each layer in Drum mode, you can squeeze an impressive 40 separate sounds into a single program, and map each sound to multiple keys. Plenty of serviceable options, when you get down to it.

Editing. There's a lot to keep track of with this instrument, with all of the duplication of parameters among the many layers. As the manual itself states at one point, referring to the effects section in particular, it's a little bit like playing a game of three-dimensional chess. The last time we got involved with that game, Spock whupped our collective butt, and not only do we still suffer the embarrassment of that incident, but it also dates us badly. Since calling Spock isn't an option for most of us, we'll have to rely on the tools Alesis has provided to navigate the edit buffers.

There are three edit modes: Program, Mix, and Effects. In Program edit mode, you switch between Program edit and Effects edit with the Select button. In Mix edit mode, the same button will take you from Mix edit to Program edit to Effects edit. The thing to watch out for is that any changes you make in any of the three modes must be saved to a RAM location for that mode. In other words, if you edit an effect while in Mix mode, saving the mix won't save your effects edits. You must save the edited effects patch to an effects RAM location. If you keep it straight, no harm will come. There's also a compare button that toggles between your current version of a sound and the original version.

There are two modes within Program edit: Edit 1 and Edit 4. Edit 1 takes you to the parameters for a single voice. You can switch voices easily, by pushing the Edit 1 button to step through the voices. Edit 4 shows one parameter for all four voices per page. This is great for programming, as it allows you to look at the filters or amps for all four voices, and compare the settings as you listen to the changes you make. It also makes it easy to set LFOs and attack times and then hear their interaction.

A similar convenience is available in Mix edit: The current channel is the one with its parameters exposed. Moving to the next MIDI channel with the MIDI buttons moves you directly to the next program.

When you're ready to save your edits, it's a simple matter of pressing the Store button, which brings up several pages of saving options. You can save the program, mix, or effect to a RAM location, or you can save a single program to a sequencer or data filer. You can even send the contents of the edit buffer to MIDI before you've saved it. What this means is that if in the course of noodling in edit mode you come up with a killer sound, you don't have to wipe out something in your user bank in order to save it: Send it to an external sequencer or data filer instead. In Mix edit, there are 17 buffers, one for each channel plus a global buffer, and any one of these can be saved via MIDI. A potentially lifesaving feature, this means you can edit all of the programs in a mix while in Mix mode. You can also send the whole enchilada to your sequencer.

For building sounds from the ground up, the QuadraSynth offers a couple of programming conveniences that aren't documented in the manual. It's best to start a new program from an initialized empty program, which can be created by holding down the Quad buttons 1 and 4 while powering up. This also initializes all of the global settings, so plan to do it once and then save it as a template to a user RAM location. The default program starts with only one

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voice enabled and, humorously, it comes up as a good old sine wave, as if that were still the basic sonic building block here in the PCM era. To enable additional voices, simply hold the appropriate Quad button (2, 3, or 4, in this case) and press the value up button. This is a bit easier than scrolling over to the Miscellaneous function to enable each voice. Use this same technique to mute voices when programming in order to hear an individual voice. The copy function lets you copy a single voice from a program and paste it in the same layer of a new program.

Effects. As is the case with many other aspects of this instrument, the effects section provides two levels of access. One is the bank of presets, which will probably satisfy most users in most situations. The other is a convoluted labyrinth that leads, fortunately, to what is essentially a QuadraVerb. In fact, it has some features you won't find on the QuadraVerb, although in other respects it has been scaled back. For those who are unfamiliar with this multi-effects device, it uses the mixing board analogy to organize its effects. In this incarnation, it can be set to any of three configurations, each of which has pitch, time, and reverb effects arranged in a set order. Each configuration provides four buses, and each bus has a unique arrangement of one, two, or three of these effect types. Within each bus, you can choose one of a number of like effects for each available type. Each effect is programmable. If you like, you can have a distinct multi-effects chain for each voice in a single program. The hard part is keeping track of what voice is assigned to which send, which configuration is assigned to the effects program, and what the configuration actually consists of, since there is no visual confirmation in the display. Turning effects on and off on the fly is impossible, as well.

Saints be praised, the manual provides schematics for each of the three configurations, and they should be treated as maps leading to the Grail. As with a hardware effects bus in a mixer, you can choose different effects routings within the individual buses. Many effects can be fed to the outputs directly, others pass through a reverb or other effects, and the mix between the two can be adjusted. The effects order can even be reversed by changing one configuration to another, as configuration 1 feeds the pitch effect into the delay, and configuration 2 has it the other way around. Ya can't tell the players without a scorecard.

Speaking of the players, let's take a look at the lineup, which as we know changes drastically from one configuration to the next. Pitch effects include chorus (stereo and mono), flange (stereo and mono), pitch detune, resonator, and "Lezlie." Delay effects can be selected from delay (stereo and mono) and ping-pong. The reverbs include two plates, room, hall, large (a large hall), gate, and reverse. You'll notice that there is no EQ or distortion. This is a bummer if you're used to depending on on-board EQ to tweak your sound. The only EQ-ish tools at your disposal here are the filter and the high and low reverb decay times. Real distortion and overdrive would be a fun addition, but let's be real. For the price, there's already a great deal packed in here.

Once your effects are in place, you can set the input levels from the available sources, which can be directly from the sound, from an effect that's just upstream, or from a mix of the two. You also set the effect parameters at this stage. In the case of reverb, you've got control over the pre-delay time, pre-delay mix, decay, density, and diffusion. Delay gives you control over time (up to 800ms mono, 400ms stereo), and feedback. In the pitch-shifter department, you can select the LFO waveform shape, speed, depth, feedback, and the tuning of the detune or resonator effects. For the real-time control freaks out there, the QuadraSynth lets you control up to two effects parameters with aftertouch, mod wheel, pitch wheel, sustain pedal, MIDI volume, controllers A through D, or the assignable pedals. The parameters available include depth, balance, speed, and level of pitch effects, time, level, and feedback of delay effects, and input, decay, balance, level, and diffusion of reverb effects. When assigning time parameters such as reverb decay time or delay time to a real-time control, however, you may get unpleasant artifacts if the control is moved while a sound is sustaining, as you would with almost any digital effects device.

Reliability. We looked at a total of three units from the first production run. The first would turn itself off every 15 minutes or so, due to a shutdown circuit that thought the current was low, so the machine must've been turned off. Both the first and second unit suffered from pot jitter, the result being that the machine would change parameters and values without our consent or knowledge. Often we'd be in the middle of adjusting a value on one bar graph, and suddenly the active graph would switch to another, screwing up our edits.

The volume wheels on the first two units produced some nasty digital artifacts when moved as the synth was sounding, in addition to the disturbingly sudden level drop-off towards the bottom of the wheel's throw we mentioned earlier. After a query on the topic, Alesis said that the volume wheel is intended to be set and forgotten, which to be fair most performers do anyway. If you need real-time volume control, you could use an expression pedal. We couldn't keep our mitts off the wheel, unfortunately. The mod wheel also had a nasty tendency to keep sending modulation messages when it was at rest in a mid-throw position. You can imagine how much sequencer memory this used up.

The third unit that we looked at reflects current software and hardware versions, according to Alesis, and no longer suffers from pot jitter

or noise from the volume wheel. There is still the volume wheel level drop-off, and the mod wheel still sends out unwanted messages if left in a midway position. Leaving it all the way down when not in use will solve the problem. Alesis will offer updates to all afflicted units still under warranty.

Digital and Analog Outputs. Besides the main and auxiliary outs, the QuadraSynth has a proprietary digital optical out for use with the ADAT digital tape recorder. The benefits of using the digital out are improved fidelity and a guaranteed clean signal. When the digital out is used, the main left and right outs are assigned automatically to tracks 1 and 2 on the digital bus, respectively, and the auxiliary left and right outs are assigned to tracks 3 and 4, respectively. Using the QuadraSynth with the ADAT is not difficult, but doing so may raise an issue.

Curious about the possibility of comparing the analog and digital outs, we listened to sounds through both, and noticed a sonic disparity between them. This turned out to be a simple difference in the level of the two outs (the digital out is 2.75dB softer than the analog outs) and, as such, is nothing to be concerned about. The only time you'd likely be aware of this difference would be when monitoring the QuadraSynth's analog outs through your console at the same time you were monitoring the ADAT outs, and the ADAT was getting its source signal from the QuadraSynth's digital out. In this situation, the signal coming from the ADAT could appear to be less beefy than the one coming directly from the QuadraSynth, because of its softer level. In reality, there isn't a difference in tone, and the solution is simple: Raise the gain a few dB on the ADAT returns.

Conclusions. The QuadraSynth puts a lot of functionality into your hands for a reasonable price. The question is: Are these the functions you need? If you've gotta have the 76 keys, consider it. If you need a multitimbral instrument with a lot of sounds to be the centerpiece of a studio on a budget, check it out. If you're the gigging type, this could be a fun axe. First-timer? Start here. The QuadraSynth is a gentle giant.

You'll find features here that you won't find on other instruments, such as the proprietary digital output for the ADAT. If you've got an ADAT, this is cool. If you're into thick orchestrations, 64-voice polyphony is swell. The promise of sound cards with up to 8Mb of new ROM is enticing. Talk about breaking new ground in the bang for the buck wars. . . .

In terms of sound quality, the QuadraSynth is very good overall, but doesn't set itself apart from comparable instruments. If sparkling sound quality is your primary concern, you could do better. If you stay in the same price range, though, keep in mind you probably won't get as much programming, polyphony, effects power, or as big a keyboard. But sound quality is a subjective thing, so let your ears be the judge.

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The decision also holds that identification of a work as a parody isn't necessary to gain access to the fair use defense — you don't have to have a track record as a parodist to raise fair use — and having been turned down by a copyright holder doesn't reduce one's ability to claim fair use.

Factor 3: "The amount and substantiality of the portion used in relation to the copyrighted work as a whole."

This factor tends to interrelate with Factor 1 in light of the "multidimensional continuum" nature of the four factors. Here the Court found that the Court of Appeals erred in holding that "Pretty Woman" copied excessively from Orbison, interpreting this factor to ask whether "the amount and substantiality of the portion used" is excessive specifically in relation to the parodic purpose. This factor *". . . calls for thought not only about the quantity of the materials used, but about their quality and importance, too. . . . [W]hether 'a substantial portion of the infringing work was copied verbatim' from the copyrighted work is a relevant question . . . for it may reveal a dearth of transformative character or purpose under the first factor, or a greater likelihood of market harm under the fourth; a work composed primarily of an original, particularly its heart, with little added or changed, is more likely to be a merely superseding use, fulfilling demand for the original,"* and consequently unfair.

The Court acknowledged that parody by nature — depending on the audience's recognition of a work so that they'll "get" the parody in the first place — requires more taking than most possibly allowable uses, including taking the most characteristic "heart" of the original, and that this must be taken into account when considering a fair use defense for parody. However, their preference is still for minimal taking: *"Once enough has been taken to assure identification, how much more is reasonable will depend, say, on the extent to which the song's overriding purpose and character is to parody the original, or, in contrast, the likelihood that the parody may serve as a market substitute for the original. . . ."* The court is serious about reserving this greater allowance to take to actual, creative parodies, but finds that "Pretty Woman" passes muster in this regard: *"[I]n parody . . . context is everything, and the question of fairness asks what else the parodist did besides go to the heart of the original. . . . [2 Live Crew] is not a case . . . where a 'substantial portion' of the parody itself is composed of a 'verbatim' copying of the original. It is not, that is, a case where the parody is so insubstantial, as compared to the copying,"* that it loses on this factor.

Factor 4: "The effect of the use upon the potential market for or value of the copyrighted work."

This is the only part of fair use that considers loss of income to the original copyright holder, and it tends to be interrelated with Factors 1 and 3. The clarification here significantly increased owners' burden in proving financial harm arising from reuse, correcting the Court of Appeal's presumption on this point: *"No 'presumption' or inference of market harm . . . is applicable to a case that involves something beyond mere duplication for commercial purposes," i.e.*, piracy. The Court noted that *". . . the importance of this factor will vary, not only with the amount of harm, but also with the relative strength of the showing on the other factors."*

The Court found that although a parody can legitimately reduce sales of the original through ridicule, due to its nature a parody is unlikely to harm the original's market in terms of substitutive effect, and so will generally fare well under Factor 4. Transformation is given another boost here: *"[W]hen . . . the second use is transformative, market substitution is at least less certain, and market harm may not be so readily inferred. . . . We do not, of course, suggest that a parody may not harm the market at all, but when a lethal parody, like a scathing theatre review, kills demand for the original, it does not produce harm cognizable under the Copyright Act. Because 'parody may quite legitimately aim at garroting the original, destroying it commercially as well as artistically,'. . . the role of the courts is to distinguish between '[b]iting criticism [that merely] suppresses demand [and] copyright infringement [, which] usurps it.' . . . As to parody pure and simple, it is unlikely that the work will act as a substitute for the original. . . ."*

Factor 4 *". . . requires courts to consider not only the extent of market harm caused by the particular actions of the alleged infringer, but also 'whether unrestricted and widespread conduct of the sort engaged in by the defendant . . . would result in a substantially adverse impact on the potential market' for the original . . ."* as well as for derivative works (a photograph of a painting is a derivative of the painting; a rendition of a song in a different style is a derivative of the original, etc.). Justice Souter notes that by not attempting to prove that their song, which in addition to being a parody also happens to be a rap version of "Oh Pretty Woman," hasn't acted to supersede sales of a non-parody rap version by some hypothetical other artist,

2 Live Crew has left this question open.

In discussing the fourth factor Justice Souter notes: *"We express no opinion as to the derivative markets for works using elements of an original as vehicles for satire or amusement, making no comment on the original or criticism of it."* (Presumably this is in reference to untransformed elements.) Some attorneys think this is exactly the category into which the great majority of conventional music sampling falls, and that the point here is simply that this kind of use has to battle its way through the four factor analysis like any other. In fair use both legislators and courts have always been reluctant to preemptively rule any category of use as wholly fair or unfair.

THE COURT'S ANSWERS TO THE USUAL OBJECTIONS TO SAMPLING

In the frequently antagonistic debate over free sampling and other techniques of artistic appropriation, many opinions have been expressed as to exactly what it is that copyrights are here to do. All sides have claimed to find basis for their positions in their personal moral convictions, but in the U.S. the code governing proscribed behavior and avenues for redress of grievance is not morality, which varies, but law — and when it comes to copyright, the law just changed. [*Ed. Note:* Keyboard*'s legal consultant feels that the decision represents a clarification of existing law, not a change.*] One way to look at the decision is to see how the new state of the law answers traditional objections to artistic appropriation and recent objections to suggestions on broadening fair use. A recent commentary in *Billboard* magazine (March 5, 1993), paraphrased below, served to collect those arguments:

"To us who put in the time, energy, creative effort, and money necessary to create our music in the first place, the use of our work for commercial gain without payment or permission is intellectual and physical theft. Intellectual property is the same as physical property. You can't take my car without permission, and you can't take my creation without permission. In music, the 'right thing' is always for samplers to pay the people who own the property, *i.e.* the copyright holders. Extending fair use's allowances for free appropriation for parody, education, and commentary to some generalized 'artistic freedom' and 'free speech' interpretation is bizarre and would allow stealing for personal gain."

This argument erroneously elevates common-sense concepts of right and wrong to the level of law. Such an interpretation is not

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supported by the law itself, which admits of important exceptions under the doctrine of fair use. A copyright holder's rights have never depended upon the amount of resources it took to develop or acquire the work. In law, there are cases of fair use where neither permission nor payment is required (". . . *If the use is otherwise fair, then no permission need be sought or granted.* . . ."), and a fair use is, by definition, not an infringement. As to the appropriator profiting, this was the central point of contention in the 2 Live Crew case. The Court held that a commercial use *per se* does not make use of a copyright-protected work an unfair infringement. As to the Constitutional differences between physical and intellectual property, physical property rights are ordinarily eternal, whereas intellectual property rights are of limited duration and extent. These limits were set to balance cultural and scientific development against private control. As to charges of physical theft, well, the copyright holder still has the original after the sample is taken.

One sometimes hears this more direct objection: "I made this record, and I'll be damned if anybody else is gonna make any money off it!" Although understandable to a point, this shows an incomplete understanding of copyright's scope and purpose. Creation simply does not bring an absolute monopoly to control all aspects of a work. A fragmentary, non-competing, transformed, commentary use may be okay even if it's commercial.

HOW WOULD PARTICULAR WORKS FARE UNDER THE NEW RULES?

Another way to examine the implications of the new rules is to see how particular appropriative works that have been removed from the world in the past might fare under the new rules.

"Gilligan's Island (Stairway)," by Little Roger and the Goosebumps (1978), a commercial 45 RPM single that got a lot of radio airplay around the country as a novelty item, was a pretty straight cover of "Stairway to Heaven" — except that the words sung to the tune of "Stairway" came from the *Gilligan's Island* theme. It was crushed by attorneys for Led Zeppelin's organization and removed from the world. This was an unusual kind of parody, sort of a parody by juxtaposition. Although hilarious and unlikely to replace the original "Stairway" in any way, this record would probably have a hard time under the new rules because of the subtlety of its comment on the original, and the limited transformation of the music taken — Justice Souter might like it, but Justice Kennedy certainly wouldn't.

Plunderphonic, by John Oswald (1989), a CD given away for free but made up 100% of often dazzlingly inventive edits of popular and classical music recordings — many different tracks of it — was crushed by the Canadian equivalent of the RIAA and removed from the world (literally; the CDs were confiscated and crushed in a machine). There's no chance *Plunderphonic* would ever replace any of its originals; most of its takings were highly "transformative" via extreme editing; it was non-commercial; and most of its takings were brief. All of this helps, so *Plunderphonic* fares better than "Gilligan's Island (Stairway)," but whether the net is positive is arguable because some of the takings were lengthy, and, although some of us in the arts can see these pieces as commenting on the originals, courts might have a harder time.

U2, by Negativland (1991), a vinyl/CD/cassette commercial release of two parody versions of U2's "I Still Haven't Found What I'm Looking For," including outtakes of DJ Casey Kasem, was crushed and removed from the world by U2's record label and music publishing company. Although possible grounds existed under U.S. trademark law to object to the release's title and cover (large letter U and numeral 2), and to the celebrity tapes under "right to publicity" law, the new fair use guidelines tend to legitimate the recording itself under copyright law. The parody included the original music and lyrics, both obviously transformed for comedic effect, a sample from the original recording, and tapes commenting on the record business in general and U2 in particular. There was no possible effect of substituting for the original U2 recording of the song (other than because of the cover, which could have been changed) — not least because of the record's limited distribution (7,000 copies vs. U2's umpteen million). Ironically, the big "U2" on the cover that made the record vulnerable to trademark law might help demonstrate the commentary link to the original work favored by the new fair use rules, making it more legal rather than less.

SUMMARY OF THE NEW, INTERRELATED FAIR USE RULES

- *The less the new work replaces the original work in its own market* — or in its pos-

sible future markets — the more likely it is to be fair. This aspect is ordinarily given more weight than any other in order to discourage uses leading to actual loss to the copyright holder. Lesser taking, reduced distribution, and extensive transformation of the taking tend to lessen possible market replacement effects, and so make a use more likely to be fair. A criticism of an original is ordinarily held to compete in a different market than the original, and so is less vulnerable on this point. There is no explicit maximum tolerable threshold for market harm.

• *The more the new work comments upon the original work,* the more likely it is to be fair, or the more leeway it may be afforded in the other areas (for example the more of it can probably be used). In commenting on the original, it can be extremely mean, even to the point of destroying the demand for the original work; but remember that it's possible in a work of art to violate laws other than copyright: celebrity names, images, and voices may be protected by right of privacy and right of publicity law; product names, including band names and titles of works, can be protected under trademark law; and slander and libel are still illegal. The new work needn't be an aesthetically *successful* commentary, so long as the intention to actually be some form of commentary is discernible. There is no explicit minimum required threshold for degree of commentary, but some on the Court would prefer to see the presence of some comment, even a minimal one, as a prerequisite for any fair use protection at all.

• *The less taken,* the more likely the use is fair ("less" taking account of how central to the original work the taking is, not just the amount). The Court strongly discourages excessive taking, although there is no explicit maximum tolerable threshold for the amount taken. The more the nature of the new work requires taking (as in parody), the more likely a greater taking is to be found fair. But don't try calling something a parody when it isn't to try to justify excessive taking.

• *The more transformative* the use, the more likely the use is fair. "Transformative" here means that the taking is changed either materially or in terms of its meaning — for example, by recontextualizing. I suppose we could say the more creative the use is, the more likely the use is fair. There is no explicit minimum required threshold for degree of transformation, but truncation alone is probably inadequate.

• *The less commercial* and/or less distributed the new work is, the more likely it is to be fair. Although there is no explicit maximum tolerable threshold for commerciality, advertising uses are less likely to be found

fair. However, a poor showing on the other factors can make even a completely noncommercial use unfair.

To simplify the whole thing to an almost dangerous point: The law encourages creation itself. Taking from a copyright-protected work in order to create a new one can be okay as long as you don't damage the original by replacing it, you don't merely capitalize on the original, and you add something significant to what you take. If it's not something new, it's an infringement — but if you've really created something new, and especially if it comments on the source, you can raise the fair use defense.

WHERE THE COURT COULD HAVE GONE FARTHER (AN OPINION)

As we said, this is not a liberal Court. We're disappointed the Court didn't take this opportunity to reverse the unfortunate trend set in the Jeff Koons case and de-emphasize their position that a copier's intention really ought to include commenting on the particular work copied. Dropping this criterion would have been consistent with the reaffirmation of copyright's fundamental purpose as promoting new works. There are plenty of perceptually and aesthetically interesting works to be made from taking existing material — even whole pieces — and creatively mutating them without necessarily imparting any particular effect of changing their "meaning" or commenting *per se* on the original. Likewise, it's possible to construct collage works that make use of untransformed, individually unremarkable cultural objects to good effect. Such mutations and collages in no way replace the originals in their own or derivative markets.

The Court's position in this regard fails to recognize that a realm of aesthetic social value in terms of a work's perceptual effect or conceptual content may exist, perhaps not even particularly related to the material content — think of surrealism, for example. There's also no acknowledgment that artists have the job of trying to make sense of our world through their work, a world increasingly consisting of media objects, and that it's natural and positive that existing media's texture and even content have begun to appear in new works of art — even when only for evocative effect. When these kinds of uses result in no loss to the copyright owner they too should have access to the fair use defense.

It's also unfortunate that Justice Kennedy wags a disapproving "Don't try this at home, kids!" finger at those who would try their hand at parody and other forms of creative appropriation in the wake of this decision when its apparent message is that there is now *more* room for creative fragmentary reuse of material, not less. At least the decision clarified that the four-factor test is a continuum, and that uses are more likely to be found fair the more the reused item is transformed.

THE FOGERTY DECISION ON ATTORNEY'S FEES

The Supreme Court's March decision in *Fogerty vs. Fantasy* both follows the 2 Live Crew decision ideologically and reinforces it operationally. Interestingly, the *Fogerty* opinion resulted from songwriter John Fogerty being sued for copyright infringement for copying from himself. Fantasy Records claimed that his 1985 song "Old Man Down the Road" infringed the music of his 1970 Creedence Clearwater Revival song "Run Through the Jungle," which they control. Fogerty won

and asked to be awarded his attorney's fees, as statute allows. Fantasy successfully argued that precedent in the Court of Appeals in Los Angeles allowed infringement defendants' attorney fees to be awarded only if the plaintiff had sued "frivolously or in bad faith." Prevailing plaintiffs, on the other hand, have almost automatically been awarded their attorney's fees.

Fogerty petitioned the Supreme Court to address this inequality, and won. The Supreme Court grounded its decision on the fact that, when it comes to promoting the "public good" policy of the Copyright Act, it can be just as important for a defendant to defeat a copyright infringement suit as it can be for a plaintiff to prevail. As before, it is left to the individual court's discretion whether to grant an award of fees at all, but the Supreme Court's new "even-handed" standard, that the winner can get attorney's fees whether plaintiff or defendant, now applies to all U.S. courts.

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It's been suggested that the Court agreed to examine these two cases in part to counter a recent tendency to see intellectual property rights as virtually permanent and unlimited monopolies, and perhaps in part to lessen the excessive copyright litigation clogging the courts — sensible, given the transition from industrialization to the information age. The legal community's reaction to the 2 Live Crew decision has been mixed, but some observers feel that the Court has struck a major blow for free speech and business growth in their eternal tension with intellectual property rights — some might say the dynamic of society has been given a boost over the preservation of wealth.

Some lawyers think copyright's monopoly has been clarified to exist only to the extent necessary to further the law's fundamental purpose, *i.e.*, promoting the creation of new works. They see in the opinion a statement that the monopoly only arises as an instrument of that purpose, and that where copyright protections would work against that purpose the monopoly is to be restrained, *i.e.* by fair use. At the least, the Court has reminded us that the popular conception of an absolute copyright monopoly is flawed.

So now we must re-evaluate our positions.

We as artists can use the new guidelines in deciding when a detected or contemplated appropriation may be allowable under the law and, therefore, whether an infringement lawsuit is worth bringing, defending, or risking. Some lawyers imagine a short-term flurry of lawsuits as publishers of all kinds try to hem in the decision with more restrictive interpretations, but most conclude that a use that might pass under the new rules is now less likely to result in a lawsuit. As a result, the prevailing hostile climate toward reuse of material is likely to soften, if only grudgingly. We all have to admit that the new rules allow more than we used to think the old ones did.

For artists who appropriate, whether this amounts to good or bad news for you personally depends upon the kind of work you would like to do and how you release your work. If you're small and you like to take real short bits and process the bejesus out of 'em, you should still have no problems (keep it up!).

If you're on a big label and you want to make records with recognizable samples from other pop records, or if you just really want to avoid any possibility of a lawsuit . . . well, you should consider letting your label's sampling clearance lawyers do their usual thing.

All us in-betweeners will have to think over the work we want to do in light of the new guidelines and decide on a case-by-case basis. Everyone who is doing — or would like to do — work involving appropriation should get a copy of the complete text of the opinion, study it carefully, and talk to a lawyer for advice if there's any doubt about particular things you want to do. (*Many or-*

[Copyright & the Law]

ganizations offer free or cheap legal referrals for artists, including California Lawyers for the Arts and Volunteer Lawyers for the Arts in New York.)

The question, "Can I sample that?" has rarely had a simple answer. Copyright is still born with a work and automatically adheres to its creator. Making a work that includes any amount of another party's copyright-protected material without an arrangement with that party has always been to risk a lawsuit, and this broadening of fair use isn't necessarily going to keep you from being sued in the first place. If somebody's mad enough and rich enough to hire a lawyer they can still sue you no matter how fair you may think the use is.

Being sued is a truly awful and potentially bankrupting experience. But don't be cowed too easily: In many cases the risk is very small. An "infringement" isn't an infringement until a court *says* it's an infringement, and now more kinds of appropriation have been made allowable. If you are sued over a truly fair sample and you can fight it off in court, the law gives you certain protections, including in the wake of *Fogerty* an increased likelihood of recovering your legal fees.

As for the other side, with the increased likelihood of being stuck with both sides' legal bills, angry copyright holders should think carefully before filing suit against an "infringement" with possible fair use defenses under the new guidelines.

CONCLUSION

Maybe someday someone will take a fair use sampling case to the Supreme Court and we'll learn exactly how the rules apply to that particular situation, but until then the 2 Live Crew opinion is the best guidance we have. The good news for everybody — including the taxpaying public — is that the combination of *Fogerty* and the "Pretty Woman" case is likely to reduce the number of copyright infringement lawsuits generally. Closer to home, sampling suits (and threats of sampling suits) should lessen as artists work with the guidelines in mind and record companies pick their fights more carefully. ■

Negativland thanks Adam Belsky, Jeff Selman, Alan Korn, John Oswald, Roger Clark, and Dick Bright. Also: Good luck, Luke!

YAMAHA CLAVINOVA P-500

Continued from page 125

it's limited to minimal text space by the two-line LCD, the information isn't very detailed, and rarely tells how to do something.

Quick-Editing. Yamaha included some "quick-editing" routines that will make a few real-time parameter changes easier and more performance-friendly. Four of the quick-edit slider's five positions allow you to dial up a menu and change parameter values on-the-fly using the two assignable buttons and two assignable sliders. (The fifth slider position disables the quick-edit function.) Three of the quick-edit menus deal with effects; the fourth allows you to adjust the volume of the A and B voices.

Roadworthiness & Looks. "The cosmetics look both high-tech and traditional," commented one player. "The aluminum-finish leg gives it the high-tech feel. It looks streamlined, yet it has enough weight to feel substantial. You want that kind of weightiness in your master keyboard."

On the surface, the P-500 seems too elegant to survive the road. A Tolex covering and retractable handles would have made it more roadworthy than its dressy plastic finish, which will likely take a beating and get marred. "As a professional piano, it should be more convenient to move around and pack up," said another. "Of course, that might be detrimental to its looks." To protect the P-500 during transportation, prepare to invest in an expensive touring case.

Yamaha need only review its past product line to see how roadworthy keyboard instruments can be made. Their CP-70 Electric Grand was built inside a touring case, and its tubular legs were stored within the removable lid. The lids on the CP-30 electronic piano and GS2 FM synth split in half and became the legs. They weren't light instruments, but one person could move them around and set them up. Don't even think about moving the P-500 by yourself. At a hefty 121 pounds (stand included), it takes two, baby.

Not everyone was convinced the P-500 isn't roadworthy: "As far as the size and weight are concerned," one player offered, "I used to carry a Hammond B-3 around, and that was just part of the gig. Younger readers may not know that it used to be understood that the keyboard player needed help moving stuff. That was part of having a keyboard player in the band."

The P-500's stand is cosmetically interesting, but the legs are cumbersome when broken down. Positioning the piano so that the stand's three hand-turned screws lock the instrument into place takes a bit of patience, and a pair of strong backs.

Somewhat making up for the P-500's physical awkwardness is its "roll-bar" mount for a synth keyboard. Too many big keyboard instruments don't have provisions for mounting a second keyboard in a convenient dual-manual configuration.

Continued on page 152

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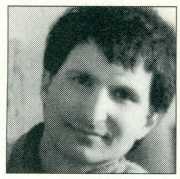


JEFF RONA

THE JOYS OF PHONE SAX
PROJECT: *HOMICIDE* — 2ND SEASON

LONGTIME READERS OF MY COLUMN (and I'm not talking about the ones who read it real slowly) may recall that last year I scored a television series called *Homicide: Life on the Streets*. Although the show won a great deal of critical acclaim, it didn't garner a substantial enough audience, and it was canceled following its initial run of nine episodes. After considerable outcry (and after it won two Emmy awards), the network decided to try the show again for a whopping four episodes, in order to see if an audience was out there. If it is, the show may come back for a full season next year.

Musically, the producers decided on a more emotional approach than before, and I was asked to submit a new tape of material to see if I fit into the mold of the new episodes. They actually considered a number of other composers, all based in New York (where the show is produced), but in the end I was asked to come aboard for the second season. Due to production problems, all four episodes were ready for scoring at once, and they wanted all of them finished at the same time. I had barely two weeks to score all of the shows. To compound matters somewhat, the show's main producer, though based here in L.A., was unavailable to discuss the music spotting, and I was instructed to just score the shows as I saw fit. I was nervous. There was virtually no room for error this time, but I felt I had a good handle on the show after having scored the previous nine episodes with excellent response.

I composed a mostly all-electronic score. However, I really believe in the power of live musicians for the more emotional parts of a score (dead ones just don't cut it), so I used a few soloists. I don't use a multitrack tape machine in my home studio: I've been using Opcode Studio Vision for the Macintosh with four channels of digital audio on virtually all of my recent projects. As long as I don't have more than four players at once, it has replaced the need for tape entirely, and makes recording sessions run about 500% faster — I also have digital editing capabilities not available with tape. For these kinds of projects, I can't imagine going back to tape again.

Greg Arraguin, the guitarist I used on the first season of the show, had just returned from being on the road with Chris Isaak, and did several guitar parts. He came to my studio and played directly into the sequencer while watching picture. After he left, I was able to fine-tune his parts and select from multiple takes. I was fortunate enough to have Mark Isham play trumpet and flugelhorn as well. As his time was very limited due to scoring projects, I went to his home studio to record in a fairly novel way. Using two VCRs at my studio, I dubbed only the scenes on which he was to play from the master tape to another video. I put the dialog onto one audio channel and scratch mixes of my music on the other. I took that videotape over to his place. As he watched the scene and played his parts (some scored out and some improvised), I recorded his trumpet to one channel of a DAT tape and the scratch mix to the other as a reference (see Figure 1). When I felt I had good takes of all of his parts, I brought the DAT back to my studio, digitally transferred the trumpet tracks into Studio Vision, and used the scratch mixes to align the trumpet with the original MIDI sequences. Once I had a match, I simply threw away the reference recordings. It worked perfectly. I could also listen to several takes of some cues and choose the parts I liked best. In some cases, I rearranged the phrases to create a different kind of musical line than he originally played, but one that fit the picture and score better.

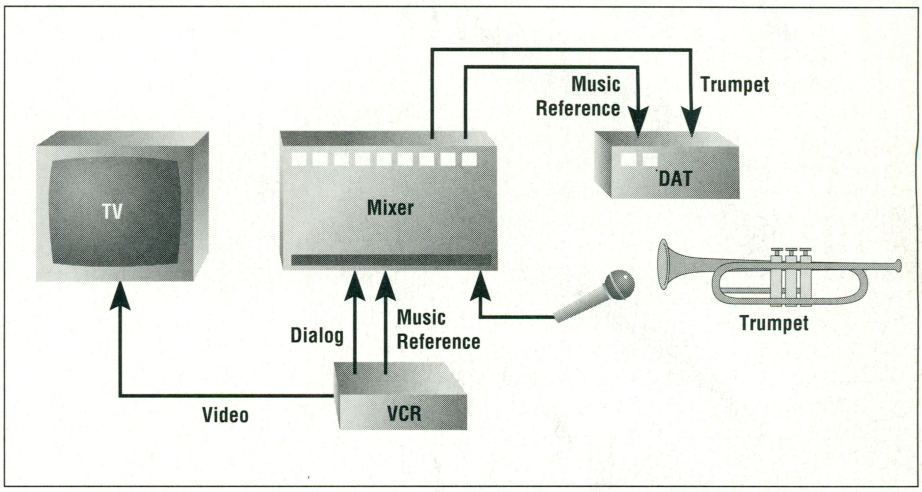


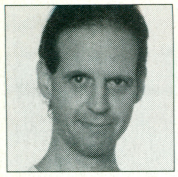
Fig. 1. Setup used to record Mark Isham's trumpet to DAT.

Most of the *Homicide* episodes end with a musical scene. Some of these are handled with songs that are purchased for the show — everything from church gospel to '60s R&B. I've done a few of them myself. I wrote one piece for the end of a recent episode that was, well, a sort of gospelish R&B song. After sequencing the whole song as a sketch, some real fun began. The song needed a hot piano part. Being a lousy keyboardist myself (can I say that here?), I called upon keyboard player/producer Lee Curerri to do some parts for me. The only problem was that I needed the part by the end of the day, and he couldn't make it out to my place. The answer? Why, do it by phone, of course. I saved my sequence as a Standard MIDI File (SMF) and sent it to him by modem. He then imported it into his sequencer of choice, which happens to be MOTU Performer. He sequenced three piano parts for me to choose from and had it back to me within the hour. I imported his SMF back into the original sequence and listened to what he had done. One was exactly what I needed, and I simply

Continued on page 147

Jeff Rona is a composer, synthesist, writer, and educator in Los Angeles. He was chairman of the MMA for five years, and is currently coordinator of the UCLA Extension electronic music program.

ILLUSTRATION: RICK EBERLY

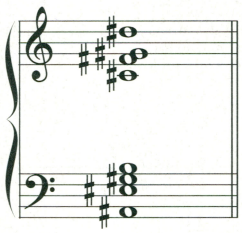


INSIDE THE MUSIC

DAVE STEWART

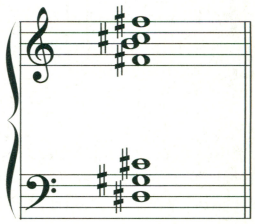
ABBOTT AND COSTELLO MEET THE SON OF CHORD VOICINGS

I DON'T USUALLY GIVE MUSIC lessons (unless you count the abstruse observations and bad jokes paraded on these pages monthly), but I recently gave a drummer friend some pointers on harmony and chord voicings. No money, I must add, changed hands — in exchange for a few weekly, two-hour sessions in which I droned on about chord names, scales, and intervals, he agreed to play drums on my latest album, a mutually satisfactory arrangement which avoided any banking operations or tax liabilities. My friend, a fantastically accomplished drummer who is equally at home playing Zappa's "The Black Page" or a simple, metronomic 4/4 rock beat, proved an apt keyboard pupil. Each week he would return eager for new information, having practised and mastered the simple but mind-twisting exercises (like the one shown in Example 1) I had devised to expand his harmonic vocabulary. As a result of his determination and application (qualities which, I believe, you *can't* teach), he made great advances, moving from simple major and minor triads to quite difficult 9ths and 11ths in just a few sessions. It was gratifying for me to see him getting the hang of this stuff, though sometimes his lust for knowledge threw me: "I've found this great chord," he'd say, playing something like this mad aggregation of pitches:



"What is it?" It's hard to explain to a relative beginner why a chord like this, which contains no less than three major and three minor chords (see if you can spot 'em, kids), can have several different names depending on context, so I couldn't always give him a simple answer. However, I was pleased to see these manifestations of a creative, enquiring mind, and would not be at all surprised if he goes on to become a good composer in years to come. Then maybe I'll be able to go and play keyboards on *his* album, in exchange for a few free drum lessons.

There are times when the simple building blocks of chord voicings — the major and minor triads, the sevenths, the sus fourths — seem prosaic and dull, and our ears yearn for something more exotic. At these times we are likely to leap into the dark, groping for new figurations and occasionally finding something exciting like this chord:

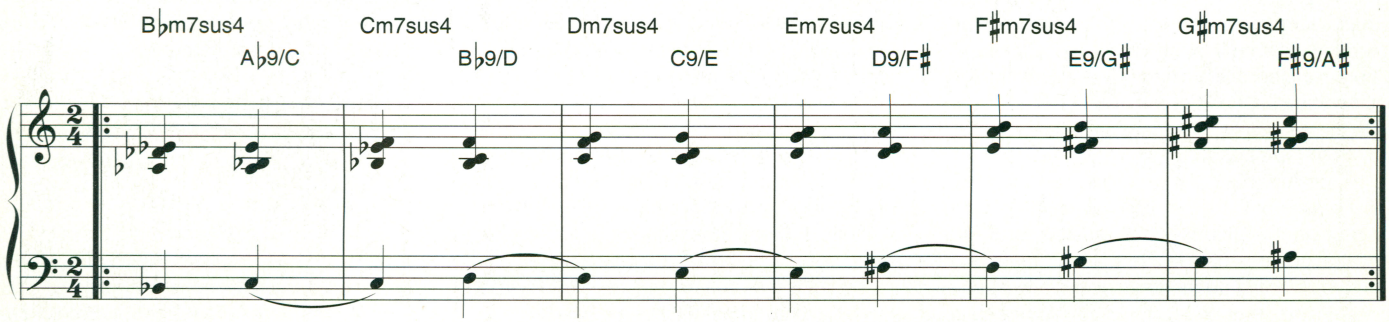


Does it matter if we don't know the names of these chords? Not really. As long as you have some method of recalling the voicing at a future date, being able to name it is a secondary consideration. But such leaps ahead, vital though they are to the creative spirit, can leave or conceal gaps in our harmonic knowledge. It's fun to find exciting new chords, but just as important to cover the basics properly. For instance (Herbie Hancock and Keith Jarrett, please skip the rest of this paragraph), are you as solid in the keys of *B* and *B♭* (traditionally the last ones to be mastered by novice keyboard players) as you are in *C* and *E*? Do you sometimes get confused by the all-black note shapes of *F♯* and *D♯m7*, or the all-white *Am7*s and *Dm7*s? I don't mean to sound patronising, or to write

---

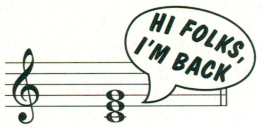
Dave Stewart has gone off to change the batteries in his composer's hat, but will be back after a four-week vacation. Remember, you can ask him questions about the musical examples in these articles, enquire which half of Rykodisc recording duo Stewart/Gaskin he is, or simply engage in fan-style drooling adulation by writing to: Broken Records, 18 Yeomen Way, Hainault, Ilford, Essex IG6 2RN, England.

Ex. 1. A simple but mind-twisting exercise which might expand your harmonic vocabulary.

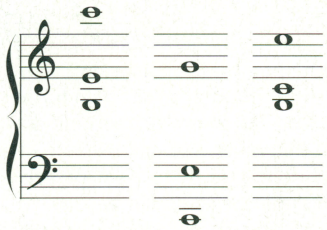


down to the thousands reading this who are better keyboardists than myself, but we all have areas where we are a little shaky. And given 12 possible keys to explore, there can be more to "the basics" than you think! With this in mind, I'm going to lay off the complex 7/9/♯11s this month and return to some simpler shapes. My apologies if these fail to tickle your harmonic funnybone, but I'm hoping (as always) to show you one or two possibilities you hadn't considered before.

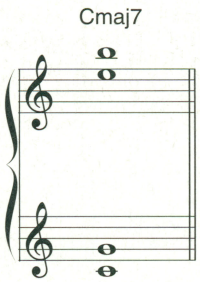
As you may remember from that fateful day when you first discovered the three main voicings of *C* major (only to join a punk band and forget two of them), it is possible to move the pitches of a chord into different registers and still retain the chord's harmonic essence. Seeing as we're on a back-to-basics kick here, let's dig out our tired old friend, the dreaded diagram of a *C* major chord, while I think of what to write next.



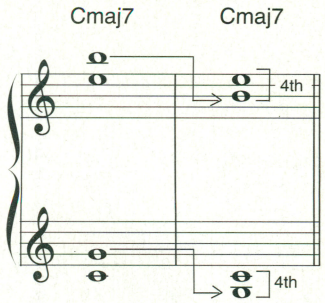
I'm sure the hundreds of comedians who submitted this shape in our Horrible Chord Competition will appreciate seeing it again. . . . Now, as I point out in my brilliant book *The Musician's Guide to Reading & Writing Music*, published by Miller Freeman and a snip at only $7.95 [*Ed. Note: We warned you before about free advertising. Cut it out.*] [*Publisher's Note: Objection overruled. We need the publicity.*], we can voice *C* major in various outlandish ways:



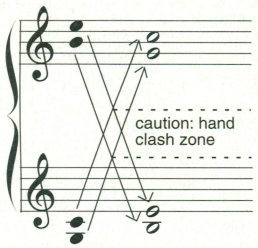
As long as the three notes *C*, *E*, and *G* (pay attention, Keith and Herbie) are present, the chord will be called *C* major. We can apply this principle to any type of chord and get interesting results. Take this major 7th voicing:



If we drop the top note of each hand down an octave, we get a new, more serious-sounding chord made out of two fourth intervals:

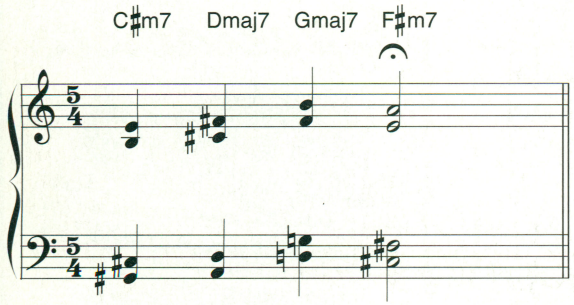


Next, a really cunning trick: Drop the right-hand fourth an octave and lift the left-hand fourth an octave, taking care not to violently bang your hands together when crossing over:

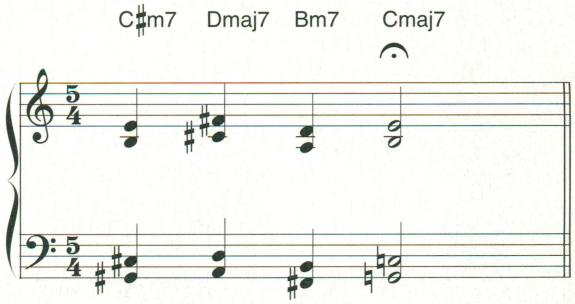


The resulting new chord has a sad, almost tragic

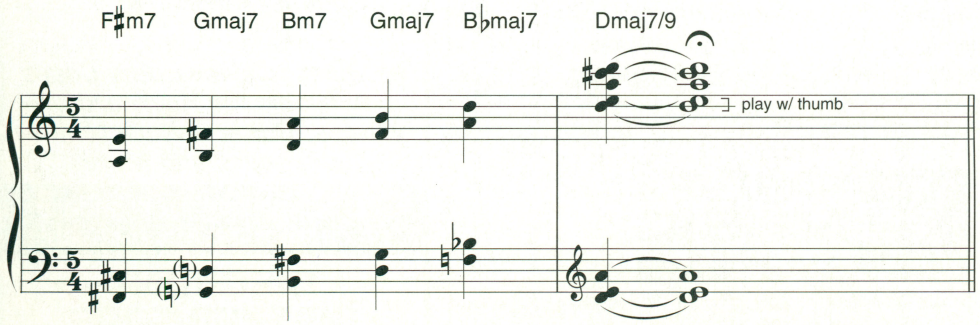
Ex. 2. Delineating a chordal melody using major and minor 7th chords voiced in fourths.



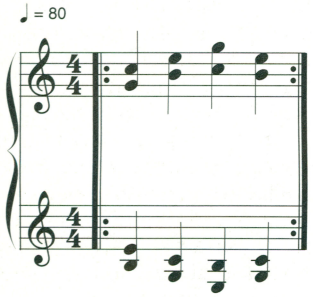
Ex. 3. Another example of a chordal melody like that in Example 2.



Ex. 4. A mixture of fifth- and fourth-based chords.

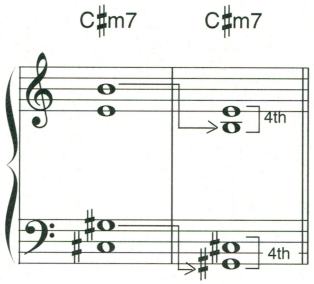


quality, but amazingly enough, still bears the same name (*Cmaj7*) as the sweet, sugary voicing of our first *Cmaj7* chord. Funny things, names. Putting on our composers' hats (mine's an 18th century British navy admiral's tricorne with the word "composer" spelled out in neon lights — how about yours?), we can juxtapose these shapes to produce some simple but pleasant chordal movements like this one:

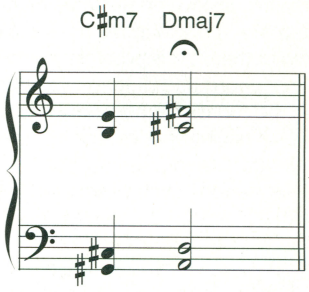


This sequence is based on contrary motion, *i.e.* hands moving in opposite directions, and features a further variation of *Cmaj7* in the shape of the third chord, which is voiced in fifths like our first voicing, but has the *C* and *G* fifth placed high above a lower *E* and *B*. Try playing this chordal movement round a few times (perhaps on a harp sound?), and once you've mastered it, use a friend/sequencer to add a low, sustained *C* bass note, using your favourite orchestral cellos patch. This will sound nice, but it gets better — at a strategic moment, change the bass note from *C* down to *A*. It's only that corny old change from the major down to the relative minor which has plagued pop music for the last 40 years, but with these voicings it will sound great! As a further extension, you can drop the bass note down to *F*, but at that point you may wish to change all the *B*s in the music to *A*s to preserve the lyrical nature of the sequence.

What's good for the goose is good for the gander (the slogan of Waterfowl Fashions, a smart 5th Avenue retail outlet specializing in unisex geese clothing), and what works for a major 7th chord will also work for a minor 7th:



This sees me changing key in my brutally whimsical way, to illustrate how the fifth intervals of a regular *C♯m7* chord can be inverted to produce a less conventional voicing based on fourths. (Stop whimpering, Herbie and Keith. And Chick, pay attention, boy.) If we wanted, we could do some more register-swapping to produce two or three more variations of *C♯m7*, but life's too short. Instead, consider this movement —



— a semitone shift from *C♯m7* to *Dmaj7*. Like the sound of that? Then you will probably also enjoy Examples 2 and 3, which show major and minor seventh voicings, fashioned out of fourths, delineating a chordal melody. In the real world, of course, different sorts of voicings

get lumped together, and the first bar of Example 4 shows a mixture of fifths-based chords (beats 1, 2, and 3) and fourths-based chords (beats 4 and 5) cooperating to produce a smooth, ascending trajectory. I tried to end on another major or minor seventh chord, but none sounded final enough. Will the *Dmaj7/9* voicing (Example 4, bar 2) do? I know I said I'd lay off the weird chords this month, but old habits die hard. . . . (Cue clanging bell.) Class dismissed!

REEL WORLD NOTEBOOK

Continued from page 143

had to raise the velocities to have it sound right with my piano sound. I was able to send this demo to the producer for approval.

Later that day, Lee was recording a bass player for one of his projects, and I asked him to play my demo for him and have him take a stab at a bass part for it. The next day, Lee came to my place with a DAT of the bass player that sounded fantastic. Over the course of the piece there was a small amount of time drift, which caused the bass part to get out of time with the sequence. When I snipped out a little silence between phrases in the audio track in Studio Vision, that problem vanished. The piece was starting to sound pretty good. I added both guitar and trumpet in the manner described above. It was starting to feel real good.

I decided that a good, rocking organ part would put the final polish on the piece. British composer/keyboardist Nick Glennie-Smith happened to be in town that week working with Hans Zimmer on a new score. I asked him if he might have a moment to play an organ part for me, and he agreed. All I had with me at the time was a DAT of my sketch. I wasn't sure how to get his part into the final recording. First I thought I would have him put his part down onto a DAT, but I had already used my allotment of four audio tracks within Studio Vision. I had him set his sequencer, which happens to be Steinberg/Jones Cubase, to the same tempo as my piece. I had him put his sequencer into record and then play along to the DAT without clicks. I assumed that with a little bit of editing, I would get his sequence to fit into the original. He saved his work as a SMF and I took it back home. I loaded it into the original sequence and trimmed out the empty space at the beginning of his track. Lo and behold, it worked flawlessly from beginning to end! These SMF's really are good for something.

The song was mixed along with everything else and shipped off to New York for the final dub. There are always pieces that don't end up being used in the show for one reason or another. Wouldn't you know, they decided not to use my song. They left the scene silent. Ouch!

Well, that's showbiz for you. In the meantime, anybody want to buy a song?

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Jan. '77 Journey's Gregg Rolie, Ramsey Lewis, Peter Nero.
Feb. '77 Billy Preston, 2-Piano Music, The Clavinet, Corea Tips.
Jul. '77 George Duke, Count Basie, Bob Moog Column, Beach Boys.
Nov. '77 Herbie Hancock, The Rhodes Piano, Earl Hines.
Dec. '77 Dave Brubeck, Andre Watts, Tom Coster, Pop Organ.

1978
Jan. '78 Liberace, Jaki Byard, Harpsichordist Igor Kipnis.
Feb. '78 Chick Corea, Corea Solo, Sounds of "Star Wars."
Apr. '78 Van Cliburn, Jean-Michel Jarre, L.A. Jazz Pianists.
Aug. '78 Jimmy Smith, Tedd Joselson, "Greensleeves," Henry Mancini.

1979
Jan. '79 Cecil Taylor, Ragtime Piano, "The Entertainer."
Feb. '79 Rick Wakeman, Carla Bley, Leonard Pennario, Pop Organ.
May '79 Dr. John, Paich & Porcaro Of Toto, Dick Hyman.
Jun. '79 Suzanne Ciani, Steve Reich, The Bosendorfer Piano.
Jul. '79 Denny Zeitlin, Playing Studio Parts, Lorin Hollander.

1980
Feb. '80 Peter Nero, Emanuel Ax, Amp Basics, Nero Solo.
Jul. '80 Roger Powell, Art Tatum Runs, Organist Bill Irwin.

1982
Apr. '82 Earl Hines, Peter Nero Solo, Terry Riley, OMD.

1984
Jan. '84 George Winston, Organist Jimmy McGriff, Warren Zevon.
Feb. '84 Playing Lead Synth, Jazz Piano Trios, Peter Serkin.
Oct. '84 IMPROVISATION SPECIAL: How-to, Why-to, When-to.
Nov. '84 Rare Bill Evans Record, Tony Banks, Classical Improvisation.
Dec. '84 Wendy Carlos Record, Mark Isham, Eurythmics' Dave Stewart.

1985
Jan. '85 Cecil Taylor, Toto Record, Teaching Piano, Moog Column.
Feb. '85 Billy Cobham On Drum Machines, Hollywood's Jerry Goldsmith.
Apr. '85 Suzanne Ciani Record, Richie Beirach Solo, Daryl Hall.
May '85 England's Howard Jones, Build A Vocoder, "Misty" For Organ.
Jun. '85 SYNTH PROGRAMMING SPECIAL: Getting Started, Patches, Ciani.
Jul. '85 Patrick Moraz Record, Kate Bush, Lennie Tristano, MIDI column.
Oct. '85 10th ANNIVERSARY SPECIAL: Chick Corea Record, Synth Technology.
Nov. '85 Mark Isham Record, Talking Heads' Jerry Harrison, Bernie Worrell.

1986
Feb. '86 Do-it-yourself Software, 1st Electronic Film Score, Nick Rhodes.
Apr. '86 New Age Aaberg Solo, Jean-Luc Ponty, Simple Minds.
Nov. '86 Journey's Jonathan Cain, Wendy Carlos Record, Petrucciani.

1987
Jan. '87 EXPERIMENTAL MUSIC SPECIAL: Sampler Record, The Stars, History.
Feb. '87 Frank Zappa, Zappa Record, Synth Glossary I.
Mar. '87 TV's Paul Shaffer, Ashkenazy, Larry Fast, Glossary II.
Apr. '87 Philip Glass, Glass Record, Arranging I, Use Old Gear.
Jun. '87 SEQUENCER SPECIAL: What It Is, Tips, Applications, Creativity.
Jul. '87 Wind Synths, Bruce Hornsby, Soviet Record, USSR Keyboardists.
Aug. '87 Jeff Lorber, Inside Roland, Pete Jolly, The Cure, New Age.
Sep. '87 Michael Omartian, DX711, Banks & Marinelli, Blues.
Oct. '87 Miles Davis And Keyboards, Prophet 2000, Horace Silver.
Nov. '87 Todd Rundgren, Roger Powell Record, MIDI Mixing, Rock Rhythms.
Dec. '87 Accordion Revival, Zydeco Record, Roland D-50 Clinic.

1988
Jan. '88 ONSTAGE SPECIAL: Performance Tips, Equipment Uses, Experiences.
Feb. '88 Stewart Copeland On Rhythm, Little Richard, David Frank Record.
Mar. '88 Computer Applications, L.A.'s David Foster, 19-tone Scales.
May '88 Thomas Dolby, Toto Solo, Moog On Moog, The Synth Industry.
Jun. '88 BACK TO BASICS SPECIAL: ABCs of Technology, Sampling Record.
Jul. '88 Corea & Hancock, Rock Arranging, Programming the ESQ-1.
Aug. '88 PIANO SPECIAL: Jazz Performance, Piano Future, Digital Pianos.
Sep. '88 Sting's Keyboardists, Patrick O'Hearn Record, Schools.
Oct. '88 New Age And Synths, T Lavitz Record, Metal Solo, IBM PC.
Dec. '88 Bon Jovi's David Bryan, John Tesh Record, Fats Waller, M1 Clinic.

1989
Jan. '89 Third-party Sounds, Corea & LaVerne Record, Elton John Solo.
Feb. '89 Randy Newman, Billy Taylor, Practicing, Art Of Noise.
Jul. '89 Mike + The Mechanics' Paul Carrack and Adrian Lee, FZ1 Clinic.
Nov. '89 Rolling Stones' Keyboardists, Multi-Effects User's Guide, Chuckii Booker.
Dec. '89 Laurie Anderson, Multi-Effects Buyer's Guide, Margaret Leng Tang.

1990
Apr. '90 Tears For Fears, Tony Hymas, Atari ST Clinic, Nine Inch Nails.
May '90 Jam And Lewis, The Future Of MIDI, "Blue" Gene Tyranny, Yamaha SY77.
Jun. '90 Jane Child, Amiga Multimedia Tools, Harry Partch, Passport Encore.
Jul. '90 Jonathan Cain, Mixer Shootout, Gershwin Meets MIDI, Ryuichi Sakamoto.
Nov. '90 Baby Face, Dr. John, The Music Of Twin Peaks, Tips for Opcode Vision.

1991
Jan. '91 Prince's Keyboardists, Opcode Studio Vision, Roland S-550/330 Clinic.
Mar. '91 Keyboards In The Grateful Dead, Ensoniq EPS Workshop, Korg S-3.
May '91 Patrick Moraz, Alesis SR-16, Yamaha SY77 Programming Clinic.
Jun. '91 Deee-Lite, How To Get A Record Deal, E-MU Procussion, Roland MV-30.
Jul. '91 Andrew Farriss of INXS, Wavestation Programming Made Easy, Roland JD-800.
Aug. '91 Rick Wakeman & Tony Kaye, IBM MIDI Starter Kits, Roland JX-1.
Sep. '91 Iain Baker of Jesus Jones, Philip Glass, Passport Pro 4 Power Tips.
Oct. '91 M.C. Hammer's Michael Buckholtz, Ensoniq SD-1 & SQ-2, Yamaha QY10 Tips.
Nov. '91 HAMMOND B-3 SPECIAL: Tips, History, Photographs, And More.

1992
Jan. '92 Thomas Dolby, Jazz Soloing tips by Billy Childs, Cyberpunk Revisited.
Feb. '92 Genesis, Frank Zappa's Universe, Digidesign Pro Tools, Alesis D4.
Mar. '92 PIANO JAZZ SPECIAL: Tips, Trade Secrets, Techniques, Transcriptions & more.
Apr. '92 1992 NEW GEAR SPECIAL: Piano Jazz Part 2, Korg M1 Clinic.
Jun. '92 Keith Emerson, Faith No More's Roddy Bottum, Ensoniq VFX Clinic.
Jul. '92 Affordable Digital Recording, Ensoniq DP/4, Roland R-70, Cubase 3.0 .
Aug. '92 Wendy Carlos, Affordable Mixers, Richie Beirach, Roland FP-8, Wersi CPF1.
Sep. '92 Tori Amos, Wendy Carlos Part 2, C-Lab Notator Clinic, Akai MX1000.
Oct. '92 Windows 3.1: Has the Mac met its musical match?, Richie Beirach.
Nov. '92 Country Keyboards: New Sounds & New Players, Alesis ADAT, Yamaha SY22.
Dec. '92 1993 BUYER'S GUIDE: 48 Multi Effects & Drum Machines Reviewed.

1993
Jan. '93 Scoring The Simpsons, Prince's Tommy Barbarella, New Digital Gear.
Feb. '93 David Bryan, The Past, Present & Future of MIDI, Kurzweil K2000 Tips & Secrets.
Mar. '93 Keith Jarrett, General MIDI, Gallery of Weird Gear by Bob Moog, Ensoniq ASR-10.
Apr. '93 M1 MONSTER SOUND SPECIAL: Over 5,000 M1 Sounds Reviewed.
May '93 NEW GEAR SPECIAL, Depeche Mode, Historic Motown Sessions.
Jun. '93 Bruce Hornsby, SCSI Survival Guide, Comprehensive Guide to Combo Organs.
Jul. '93 Vintage Synths, Jazz Piano Master Class, Digidesign Session 8, Akai S3000.
Aug. '93 CD ROM - The Hows, Whys & Whats, Peter Gabriel, EPS-16+, Yamaha QY20.
Sep. '93 Marcus Roberts, Ensoniq TS-10, ADAT Power-User Clinic, Roland JW-500.
Oct. '93 Paul Shaffer, Pete Townsend, Hammond XB-5, Tascam Digital Recorder.
Nov. '93 Home Studio Solutions, New Gear & Sounds, Bruce Hornsby - A Private Lesson.
Dec. '93 PIANO BUYER'S GUIDE: Digital & Acoustic, Sampled & Synthesized.

1994
Jan. '94 Jurassic Rock: Al Kooper, Jon Lord, Felix Cavaliere. Plus, Korg i3, Roland AX-1.
Feb. '94 Radical New Technology Redefines Synthesis. Plus, Roland Sound Canvas.
Mar. '94 Nine Inch Nails, New MACs & PCs, Korg 01/W Power Tips, E-Mu Morpheus.
Apr. '94 Keith Emerson, Frank Zappa, Hand Injuries-Causes & Cures, Opcode's OMS
May. '94 New Gear: Synths, Software, Multimedia, 25 Hammond Licks, JV-1000Tested.

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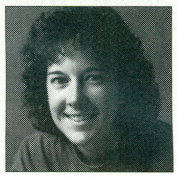


▲ SOFTWARE

COACH CLAIRE (MACINTOSH). Wouldn't it be nice to have your own personal music coach to help develop skills in ear training, sight reading, and music theory? Opcode's new music education software, **Claire, The Personal Music Coach** ($129.95), uses pitch recognition technology coupled with the Macintosh's built-in microphone (Mac IIsi or later, or third-party external digitizer) to provide customized instruction based on the student's skill level. The software offers more than 500 exercises on major and minor scales, intervals, arpeggios, and instrument mechanics. Claire has provisions for allowing plug-in modules (yet to be released from Opcode and some third-party developers) for curriculum and sounds from specific instruments. You can also view and print a log of how you performed on the exercises, and then alter the exercises based on your performance.

Opcode has upgraded their **Studio Vision** Macintosh sequencing software with new digital audio recording and editing capabilities. **Version 1.5** ($995; upgrade from ver. 1.4, $149.95), the first sequencer to support DAE (Digidesign Audio Engine), provides four-channel compatibility with Digidesign's Audiomedia I and II, Sound Tools I and II, and Pro Tools. The new version also allows four independent channels on Sound Tools II using all four inputs and outputs of the audio interface. The software offers the ability to scrub digital audio, a process in which the user drags the mouse over the graphic waveform of the audio and plays the sound file up to one and a half times normal speed (forward and backward). Studio Vision 1.5 also sends MTC and is MIDI Machine Control compatible. Opcode includes DAE free with version 1.5.

Also on the Opcode upgrade path is their Studio 5 MIDI interface. The two-space rack-mount **Studio 5LX** ($1,195; upgrade, $149.95; new ROM and RAM, $79.95 and $99.95, respectively) combines the functions of a MIDI interface, MIDI patchbay, MIDI processor, and SMPTE synchronizer. The new version adds four times the RAM for internal patch storage, patch chaining for stepping through non-consecutive Studio 5LX patches, and software graphic editing of maps for many software patch components. Users can chain up to six Studio 5LXs per Macintosh. OMS (Opcode MIDI System) comes bundled with the Studio 5LX. Opcode Systems, 3950 Fabian Way, Ste. 100, Palo Alto, CA 94303. (415) 856-3333. Fax (415) 856-3332.

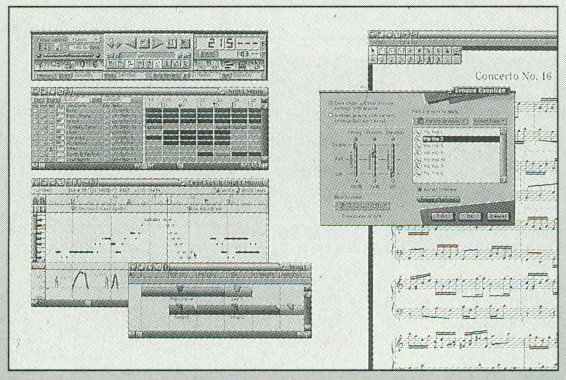
ZOBOZIAN UTILITY (ATARI). Zobozian Software's **MIDI Master Drummer 2.5** ($44.95) is a MIDI utility that provides a dedicated interface for creating and editing rhythm tracks. The drum pattern generator's latest version offers Atari Falcon030 compatibility, extensive on-line help, support of Standard MIDI Files (both formats), full MIDI note range, drum pitch input via MIDI as well as mouse, and programmable note velocities for accents. Version 2.5 also adds pattern, phrase, and song naming, randomizable phrases and songs, and improvements in the entry and editing capabilities. Zobozian Software, Box 6901, Grand Rapids, MI 49516-6901. (616) 784-4570. Fax (616) 784-0193.

▲ HARDWARE

WHEN IT RANES, IT POURS. The first of several new Rane products this month is the **PE 17** ($499), a single-space rack-mount five-band parametric equalizer with two additional sweepable low- and high-cut filters. Each of the five parametric bands will

SPEC SPOTLIGHT

PERFORMER'S NEWEST TRICKS. This month, we find a new performer under the spotlight: Mark of the Unicorn's **Performer 5.0** ($495). This upgrade to their sequencing software for the Macintosh is jam-packed with new features, most notably support for color monitors, a MIDI Machine Control window that lets Performer 5.0 work with any MMC-compatible device, and a groove quantize function. The new version also offers a built-in groove editor and a graphic slider interface that allows users to control the amount of timing, velocity, and duration that is applied, and to dynamically adjust the feel of grooves as the sequence plays. You can create your own grooves or use Groove Quantize to tailor grooves to align with one of ten beat divisions (includes 50 free DNA Grooves from WC Music Research). You can also now edit your sequences on a music notation page. Scores and parts can be printed directly from Performer. Page numbers, titles, and rehearsal marks can be added to the score, and measure spacing can be either fixed or proportional. There's also drum machine-style recording, a library of drum patterns in Performer format, a large SMPTE counter, and support for bank select messages. Performer 5.0 is compatible with the AV and PowerBook series, as well as all current Mac operating systems, and includes FreeMIDI.



While in MOTU mode, we should mention the **Digital Time Piece** ($995), a desktop digital audio synchronizer that provides conversion of many digital audio synchronization formats as well as support for MIDI Machine Control and SMPTE timecode. The synchronizer works with Digidesign's Pro Tools, Sound Tools II, and AudioMedia II, the Alesis ADAT, Tascam's DA-88, MOTU's Performer and Digital Performer, and most professional MIDI sequencers on any computer platform. It allows multiple digital audio products to lock to each other with sample-accurate resolution; sample rate is selectable between 44.1 and 48kHz. The Digital Time Piece translates SMPTE timecode to digital audio address track and vice versa, can select the video input as a timebase to generate word clock and SMPTE, and includes a Sony 9-pin video sync connector and S/PDIF connectors. Mark of the Unicorn, 1280 Massachusetts Ave., Cambridge, MA 02138. (617) 576-2760. Fax (617) 576-3609.

sweep from 20Hz to 20kHz, and each offers -15 to +12dB cut and boost, bandwidth range from two octaves to 1/30 octave, and an individual bypass switch and LED indicator. Individual input and output level controls, an input overload indicator, and a master bypass switch are also included. Inputs and outputs are fully balanced on 1/4" and XLR connectors.

Rane has added the **FSC 22** stereo compressor ($399) to its Flex Series of modular signal processors. The unit features separate threshold and ratio controls for each channel and switchable attack/release time and dual function metering, which displays gain reduction or channel output. The FSC 22 utilizes Analog Devices SSM2018 VCSs and provides both 1/4" TRS and professional XLR input and output connectors. A switch on the rear panel selects optimum gain matching for -10dBV or +4dBu equipment.

The **GE 60** ($849) stereo one-third octave graphic equalizer features two separate channels of 30-band Interloping Constant-Q filters with 45mm slider controls. The three-space rack-mount unit offers sweepable high- and low-cut filters, input level controls, LED overload indicators, and an LED-indicated hardwire bypass. Active balanced inputs and outputs are available simultaneously on 1/4" TRS and XLR terminal strip connectors. Rane Corp., 10802 47th Ave. West, Mukilteo, WA 98275-5098. (206) 355-6000. Fax (206) 347-7757.

HARMONY PROCESSORS. Digitech's **DHP-33** ($699.95) Intelligent Pitch Shifter is a three-part harmony effects processor that allows creation and manipulation of harmonies in three modes: chromatic, scalar, and chordal. Chromatic harmonies are always the same number of steps from the input note, scalar or scalic harmonies will move up and down a specific scale with the input note, and chordal harmonies always remain members of a specific chord type.

With **version 2.0** of Digitech's **DHP-55** digital harmony processor, the total effects configuration list is increased to over 175 (more than 70 configurations feature a new reverb algorithm), and every harmony effect/preset can now contain reverb. A new volume modulator adds tremolo and a stereo out-of-phase tremolo to the DHP-55. Other additions include a pitch-correct mode, intelligent overflow message handling, faster custom harmony editing by instrument input, and parameter editing via MIDI sys-ex and continuous controllers. The pitch-correct mode shifts the input signal directly to the nearest correct scale tone. Intelligent overflow messaging shows which effect is being overdriven, allowing the user to immediately adjust levels in the overloaded effect. The software upgrade, which is free to DHP-55 owners, reportedly retains any user presets that were previously programmed. DigiTech, 8760 S. Sandy Pkwy., Sandy, UT 84070. (801) 566-8800. Fax (801) 262-4966.

SYQUEST DRIVE-FEST. The **SQ3270S** (approximately $650 for drive and cartridge; approximately $80 for each additional cartridge) is a SCSI version of SyQuest's 3.5" 270Mb removable hard drive. It reads and writes to the Syquest 3.5" 105Mb cartridge. It requires four watts of power and a single five-volt power source, and does not require a fan. The drive reportedly has an average seek time of less than 13.5 milliseconds.

SyQuest has also introduced a 500Mb 5.25" removable hard drive cartridge. The **SQ5200C** (less than $599 for drive and cartridge; $99-$109 for each cartridge) features a SCSI II interface and reads and writes to 44, 88, and 200Mb cartridges. The drive, which has an average access time of 18ms, features unlimited capacity, near-line storage, system sharing and fast back-up, data security, and transportability. It is also fully compatible with Apple's new Macintosh PowerPC. SyQuest Technology, 47071 Bayside Parkway, Fremont, CA 94538. (510) 226-4000. Fax (510) 226-4102.

FAIRLIGHT SYSTEM. Fairlight's **MFX3** provides 24 tracks of simultaneous playback from a single hard disk, 24 inputs and outputs in digital and analog, and DSP functions such as real-time clip-based EQ. The MFX editing console is the basis of the user interface. The standard MFX3 can be configured from four to 24 tracks, and the MFX3 "Mini" from four to eight tracks. Both are available in rack-mount or portable units. Prices start at $27,000 for the four-track Mini. Fairlight ESP, Box 942, Brookvale NSW 2100, Australia. 61 (2) 975-1230. Fax 61 (2) 975-1368.

LINN SAVIOR. Forat continues to keep Linn products alive by offering service and updates, the latest being version 7.09 for the Linn 9000 drum machine and sequencer. The basic **F-9000** (prices start at $2,500) offers a disk drive, 43,000-note memory, the ability to load four custom sounds from disk, and the 7.09 software.

Many options exist for the 9000, such as a **SMPTE card** ($500) that will allow you to read SMPTE at four rates (24, 25, 30, and 30 drop-frame), MIDI clock, and Song Position Pointer. A **sampling card** ($450) lets you record your own sounds into the F-9000. With **18-pad sampling** ($1,000), you can load custom sounds on all 18 pads and adjust the filter amount on the tom and conga pads. This option comes with 336K of memory for sounds. A **64K memory mod** for the 18-pad sampling ($650) allows for loading sounds of up to 64K into each pad. With this extra memory, there is a total of 1.3Mb of memory for sounds. Also available is a **large display** ($225) that is approximately four times larger than the 9000's display, has an adjustable angle of display, and sits on top of the 9000. Lastly, a **sound library** of over 1,000 sounds comes free with the Forat 9000. Forat Electronics, 11739 Ventura Blvd., Studio City, CA 91604. (818) 763-3007. Fax (818) 763-1087.

▲ SOUNDCARDS

BUNCH OF BEACH CARDS (IBM-PC). The first stop in the Turtle Beach soundcard cruise is **Tahiti** ($399), a digital audio card that provides two tracks of 16-bit hard-disk recording and a Creative Labs Wave Blaster-compatible header allowing for the eventual addition of a synthesizer.

If you're looking for a portable way to add sound to your notebook presentation, check out the **Audio Advantage** card ($199), a 12-bit mono audio card capable of sampling at 5.513, 8.0, 11.025, 22.05, and 44.1kHz. The Windows-compatible card has a MIDI port with in, out, and thru connectors, and features a programmable mike/line-level gain, 12-bit digital/analog converter, 16-step analog output level control, and 12-bit digital volume control. Both the Audio Advantage card and Tahiti offer Turtle Beach's Hurricane architecture, which uses a Motorola 56001 digital signal processor chip and a proprietary buffering system.

Turtle Beach has added the 32-voice General MIDI-compatible Wavefront sample playback synthesizer to their **MultiSound Monterey** ($599) PC soundcard. The card includes an effects processor, a patch editor, MousePlayer (lets you trigger sounds without a MIDI keyboard), and Wave SV (a sample editor with a point-and-shoot sample loader). An assortment of software-upgradable reverbs and echoes can be added to any MIDI file using Monterey.

From Monterey we head to **Rio** ($249), Turtle Beach's new synthesizer module. Rio is an add-on for soundcards featuring the Creative Labs Wave Blaster interface. Thirty-two voices of 16-bit General MIDI-compatible instruments are stored in 4Mb of ROM on the card. Rio offers a real-time effects processor, and is pin- and form-compatible with WaveBlaster as well as Turtle Beach's Tahiti. Monterey and Rio offer 256K of sampling RAM (upgradable to 4Mb).

Cruising right along to the final new Beach soundcard, we arrive at **Maui** ($199), a wavetable synthesizer upgrade card that offers 128 General MIDI-compatible 16-bit sampled instruments stored in 2Mb of ROM. The MPU-401-compatible card ships with 256K of sampled RAM, upgradable to 8Mb. Monterey, Rio, and Maui offer SampleStore, a user-definable sample player that allows users to create their own samples using existing Wave files as starting points. Turtle Beach Systems, Box 5074, York, PA 17405. (717) 767-0200. Fax (717) 767-6033.

MACWAVEMAKER (MACINTOSH). Morning Star Solutions has introduced a card that brings Kurzweil's K2000 and Mark 10 sounds to any NuBus Macintosh. The **MacWaveMaker** ($499) provides MIDI in and out connectors and drivers for most popular software applications. The card offers 357 sounds, 15 drum kits with over 400 percussion sounds, and 32-voice polyphony. Morning Star Solutions, 7 King's Pine Rd., Westford, MA 01886. (508) 692-0373. Fax (508) 692-6535.

YAMAHA CLAVINOVA P-500

Continued from page 141

The roll bar is reasonably sturdy — rated to support 46 pounds — but its height isn't adjustable. Also, it makes a lousy music stand, an item that many pianists will surely miss.

Microtuning. Yamaha was among the first manufacturers to provide non-equal-tempered tuning possibilities in their electronic instruments. While microtuning is one of the P-500's capabilities, it's a pretty disappointing implementation. All you can do is tune each note up or down as much as 50 cents. That means you're limited to 12-note-per-octave scales. In addition, you have to manually tune every key; there are no copy functions to duplicate an octave's worth of microtuning — and if you want to create a new tuning for a two-voice layer, the notes in each voice must be tuned separately, as each has its own tuning table, and one table can't be copied onto the other. You can use the copy utility to copy one entire layer (including the tuning table and all other settings) onto the other, but that will change the sound as well as the tuning table.

What's also rather disconcerting is that the P-500 has no preset tuning tables. Such tables — meantone, Kirnberger, and the rest — have been a standard Yamaha feature for years; where did they go? Oh, well — at least separate P-500 microtunings are stored with each performance, rather than being global.

The P-500 is capable of simulating stretch tuning on an acoustic piano. Three degrees of stretch tuning are available for both the lower and upper ranges of each voice.

Conclusions. In executing the P-500, Yamaha was attempting to make the ultimate digital piano. To a great extent, they've succeeded. The P-500 surpasses any other digital piano that we've seen.

Prior to playing the P-500, one of our favorites was Yamaha's own Clavinova PF P-100 (reviewed Aug. '93), which costs less than a third of the P-500. Besides the P-100, there are a number of other pro-oriented digital pianos that cost considerably less than the P-500, such as the Korg SG-1D, which has been around since the late '80s, and new digital pianos from Kurzweil and Roland, the PC88 and RD-500. Of course, none of these — nor any other digital piano that we're aware of — offers quite so many features, as pleasing a keyboard action, or as gorgeous a sound as the P-500.

Some musicians might prefer to save a few thousand dollars and settle for a weighted-action master keyboard like the Peavey DPM C8 (reviewed Sept. '92), the Fatar 2001 (Apr. '93), or even Yamaha's venerable KX88 (Aug. '90), along with a good-sounding piano module like the E-mu Proformance, Kurzweil MicroPiano, or Roland P-55 (all reviewed Feb. '94). You would still have cash left over to invest in a couple

of additional synth modules. While such a system would be more flexible in terms of timbre generation and perhaps controller options, it won't be as easy to work with and set up. In addition, none of those master keyboards feel as good as the P-500's keyboard, and those piano modules won't respond nearly as well to your performance nuances (notes and pedals). Nor will they sound as good.

How did our expert panel feel? "It would be nice to have something like this without all the computing power," one player surmised. "Yamaha has put a lot into the touch and feel, and the basic sound and programmability. I wonder how much they could make it for if they threw away the deluxe programmability." "I could never see spending ten grand on a digital piano," vowed another. "Give me a good master keyboard and a rack of synth modules." "I love this instrument," admitted one, "but I don't like the price. If it cost less than $5,000, I'd buy it." "Even though I would have no qualms about using it live," said one, "I would hesitate taking anything this expensive to a gig."

"It feels top-of-the-line," concluded another player. "Nothing feels cheesy. I commend them for the pedal functionality. They must have listened to a lot of players." "It's fantastic," enthused one. "I'd buy one if I could afford it."

There's no question the P-500 has the tone and touch of a top-notch instrument. But is it worth ten grand? You be the judge.

Recording Synthesizers

Continued from page 54

keys at just the right time when overdubbing into a multitrack recorder, on mixdown the recorded result may sound late compared to other instruments. You may also want to vary timing for esthetic reasons, such as delaying a drum part for a more "laid-back" sound, advancing a hi-hat part to "push" the song, or making an attacking string sound appear to be more "in the pocket." Delaying a part after recording is easy — just feed the track through a delay line — but what about advancing the timing?

If you have an open track on an analog deck, use the oldest trick in the book: Flip the reels so that your tracks play backward, then use a delay line to delay the track you want to advance. Record the delayed part into an open track, and when you re-flip the tape for normal playback, the track will be advanced by the amount of delay you added.

ADAT aficionados with a BRC have an even better option, since each track can be delayed on playback by up to 170 milliseconds. Try setting a delay of 85 milliseconds for all tracks, then adjust tracks ahead or behind this reference delay as needed.

Speaking of flipping the reels — that was how the original backward reverb effects were generated. Real backward reverb sounds very different from the "backward" algorithm in the average effects processor. If you have access to a sampler with a reasonable amount of memory, you can create backward reverb by sampling the phrase you want to process, reversing the sample, playing it through any good reverb onto a DAT deck, and then sampling the output of the DAT and reversing *that* sample. The original phrase, being reversed twice, will sound the way it did before, but the reverb will only be reversed once, so it will fade in before each peak in the phrase.

MAKING TRACKS

Remember, machines don't kill music — people do. If your synths sound sterile on playback, roll up your sleeves and get to the source of the problem. Like most acoustic instruments, the human experience is fraught with complexity, imperfection, and magic. Introduce some of that spirit to your synth recordings, and they'll ring truer to your heart, as well as to your music.

KEYBOARD

CLASSIFIEDS

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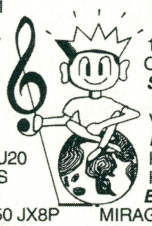

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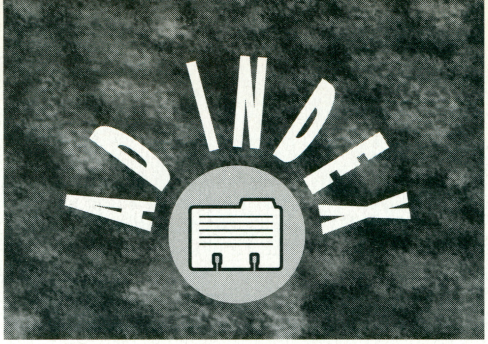

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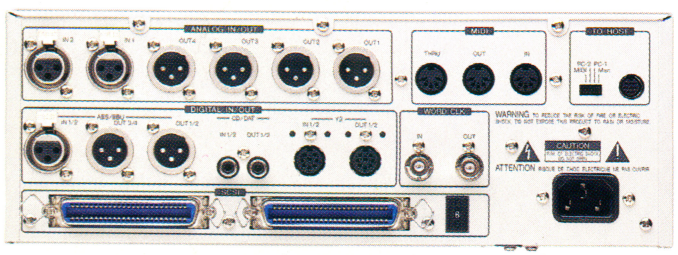

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